

**Beaufort Island  
Area Lease Sale  
1975**

# **Beaufort Island Area Lease Sale**

***Public Hearing***

**Barrow**

**1975**

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HEARINGS ON  
THE BEAUFORT ISLAND  
OFFSHORE AREA  
LEASE SALE

Hearings of Alaska Department  
of Natural Resources on  
Possible Oil and Gas Lease Sales  
in the Beaufort Island Area

May 27, 1975  
Barrow, Alaska

Hearing Panel:

Guy R. Martin, Commissioner of Natural Resources  
Lieutenant Governor Lowell Thomas, Jr.  
Larry Eppenbach, Deputy Commissioner of Treasury

Witnessess testifying

Glenn Simpson - Atlantic Richfield Company

Wayne Rodges - A.O.G.A.

Dr. Max Brewer - A.O.G.A.

Eben Hopson - North Slope Borough

Joseph Upicksoun - Arctic Slope Regional Corportation

Thomas Napageak - Kuupik Corporation

Dr. Warren Denner - Naval Arctic Research Laboratory

Thomas Brower - Cape Symth Whaling and Trading Co.



Hearings of Alaska Department  
of Natural Resources on  
Possible Oil and Gas Lease Sales  
in the Beaufort Island Area

May 28, 1975  
Fairbanks, Alaska

The recorder failed to give intelligible tapes for the remarks  
of:

Commissioner Martin, Lt. Governor Thomas and Larry Eppenbach  
and testimony of:

Frank Murkowski - Alaska National Bank,

Wayne Rodges - A.O.G.A.,

John Carr - Atlantic Richfield Company  
(written testimony of J. Carr was submitted and  
is attached)

Witnesses testifying

Dr. Max Brewer - A.O.G.A.

Celia Hunter - Alaska Conservation Society

Pat Senner - Friends of the Earth

Gil Zemansky - Fairbanks Environmental Center

C. W. Baer - Greater Fairbanks Chamber of Commerce

Richard Furniss - Self

Dr. William Wood - Fairbanks Industrial Development Corporation

# P R O C E E D I N G S

## Barrow

Commissioner Martin: These hearings are being held under the sponsorship of the Department of Natural Resources on a possible state oil and gas lease sale in the Beaufort Island area of the Beaufort Sea. The area which is covered by the hearing includes the state-owned areas in the Beaufort Sea between the Canning and Colville Rivers.

It has come to our attention that there may have been a typographical error in the notice which mentioned the areas between the Sag River and the Colville and we would like to amend that notice at this time to include the broadest possible lease area so that comments can be heard on any area along the state-owned areas along the North Slope.

I'd like also at this time to incorporate by reference in the hearing record the tentative announcement of these hearings which appeared in various places throughout the state. When I say these hearings are conducted by the Department of Natural Resources and sponsored by that department, assume that it is the statutory responsibility to hold such sales.

I'm accompanied here today, on the hearing panel, by Lt. Governor Lowell Thomas who's here not only representing Governor Hammond but also in his capacity as Chairman of the Alaska Growth Council; and by Larry Eppenbach, who's the Deputy Commissioner for the Department of Revenue, who's filling in today for Commissioner Sterling Gallagher who stayed for the

last few days for the legislative session in Juneau.

The hearings are held today because a lease sale in the Beaufort Sea area is one of several financial options being proposed by the State of Alaska, being considered by the State of Alaska, and is under consideration based on this; the consideration of revenues as well as the pursuit of the rational oil and gas development policy and the need for exploring new areas for energy resources. Consideration of such sales, tempered by environmental and technical considerations, as well as the social economic repercussions of the lease sale and by the ordinary caution which we desire to proceed with any such sale. The purpose of the hearings is extremely broad. Your testimony and commentary is invited on any or all aspects of such a proposed sale, including technical and environmental issues, state revenue needs, oil and gas development policy, social economic impact, leasing methods or virtually any other aspects of such a proposed sale on which the public would like to comment. Although such a sale, and all oil and gas lease sales are a function, statutorially of the Department of Natural Resources; the presence of the others on the hearing panel today and the fact that these public hearings are being held in three locations in Alaska is we hope a reflection that the administration is going to seek an extremely broad decision making base for this sale and to try to involve the public to an unprecedented extent before making any decision to proceed or not to proceed or in fact where to proceed on such a

sale. We are ready to proceed. I see that our first witness is not yet here. I wonder if I might call on Lt. Governor Thomas and Larry Eppenbach for any comments they wish to make.

Lt. Governor Thomas: Thank you, Guy and good morning once again, folks. As the Commissioner said, I'm here at the suggestion of the Governor and also being Chairman of the Alaska Growth Policy Council, I'm here to listen and truly to learn as much as I can. I think it's a significant point that needs to be kept in mind that this administration, just to underline what the Commissioner has just said, in seeking public participation was not required to come up with an EIS regarding Fairbanks, Beaufort Sea but nevertheless this administration felt that it was proper to do so and is most concerned with people having a chance to speak regarding these things and also to have a maximum opportunity to learn what the various impacts and implications are for this kind of an oil and gas lease sale. I think that everybody understands the problem of financing in the State, the timing matter and whatnot and with that I'll just say that I'm delighted to be here and have a chance to witness your testimony and I hope that we will have some good testimony from some of the local people up here. I understand that Eben Hopson may be coming over fairly soon. To me that's most important to know what the local folks up here have a say about it.

Thank you.

Larry Eppenbach: I can only emphasize what Lowell has already said and am as well representing the Department of Revenue.

We're here to listen and learn. The Department of Revenue has distributed a pamphlet entitled "Alaska '75, Facing the Crunch." It doesn't answer any questions, it raises some. It tries to discuss several, in fact seven, financial options facing the State now, that we have available to meet the immediate crunch and some of the opportunities the State has in the years of oil production in the later 1980's and 1990's. I really have nothing else to add to that. I expect to learn a great deal this morning and listen.

Commissioner Martin: The way we think we'll proceed, we have a short witness list as you can see. Our first witness Joe Upicksoun from the Native Regional Corporation is not yet here and we assume he'll be here later. We anticipate that we will just take whatever comments you care to make and then generally limited by the comment area which you choose, we may have some questions or inquiries to make of you to further explore some of the things we want to talk about. So, if we could, could we move down to the second level on the witness list and have the ARCO representative who's; Glenn, that's you today is it not?

Glenn Simpson: Is it plugged in?

Commissioner Martin: Sure, I think so; is it not? Will you identify yourself for documentation for our records, please?

Glenn Simpson: Alright Commissioner Martin, and Lt. Governor Thomas, Mr. Eppenbach. My name is Glenn Simpson and I'm the North Alaska District Manager for Atlantic Richfield Company. I think that it is significant that you gentlemen

would take time from your busy schedule, particularly at this time with the legislature drawing to a close, to come to the Arctic and hold these hearings cause there is no other way you can really get the flavor of what problems are and what the opportunities are except to get right where the action is going to be.

Atlantic Richfield Company is enthusiastically in favor of a State of Alaska competitive oil and gas lease sale in the Beaufort Sea and at an early date. We are confident that industry has the present technical capabilities, materials, capital, personnel, and desire to explore for and develop the oil and gas potential of the Beaufort Sea nearshore area. This is the State area which we are discussing.

Industry's operations, in the Prudhoe Bay area particularly, including those of Atlantic Richfield Company, have demonstrated affirmatively that we can adjust to Arctic conditions and operate in an environmentally sound manner. Moving offshore into the shallow waters of the Beaufort Sea is the next logical step, and we're ready to take that step.

As a major employer of the North Slope community, Atlantic Richfield looks forward to long-term job opportunities for local residents not only in the Prudhoe Bay Field, but also in potential new fields in both the onshore and offshore areas.

We encourage the state to set a firm sale date with specific tract designations as soon as possible to allow for planning by industry and to assure a maximum return to the people of the

State of Alaska.

We appreciate the opportunity to make these few brief comments to you. We'll be represented at Fairbanks and also at Anchorage but if there are any questions, I'll be pleased to attempt to answer them.

Commissioner Martin: Thank you very much. If I could before I see if there are any questions, I just want to mention for everyone else, we'll hold the record on these hearings open until June 15, so that if there are further extensions of your remarks or responses that you or others would like to make to remarks of others, the record will be open until that date. Any written submission should be sent to my office in Juneau.

Boy, I'm not sure I'm going a little beyond what you said which were very general remarks, but it would be quite interesting to me if you feel able to do so at this time to describe the operations that are presently in the Beaufort Island area. That is the Gull Island operations and the others that are operating in an area that will be similar to what we are thinking about doing.

Glenn Simpson: Okay. Gull Island was a very, and is, a very small island and we have planned to drill three, possibly four, wells in that island to develop and explore acreage that can be reached by drilling directionally from this location. We prepared the island for drilling by installing sheet piling around the perimeter and above the mean high-tide level, then filling the island with approximately five feet of gravel, we

extended the elevation of the island approximately five feet. We have moved the rig on the island and it drilled a well to a moderate depth and suspended operations for the summer. The rig was moved over the ice, all supplies were moved over the ice, and it was a, you could call it a dry location, because all the waste material including cuttings, drill cuttings, waste mud, a fluid of any kind then was hauled from the island and was disposed of on shore in an environmentally safe manner. So, the water around the island, the area around the island, was left more-or-less in it's virgin condition.

Commissioner Martin: What would be your proposed, when that well goes into production, what would be your proposed method of bringing that oil to shore.

Glenn Simpson: If this area is produced, several alternatives would be considered. Building a causeway from shore of the island in gravels; it's a very shallow area. It could be buried, the line could be buried from the island to shore or it could be placed on vertical support rims, placed above the water. Now which of these three we would use, we just don't know because we don't know what, really what facilities we would need until we find out what we have.

Larry Eppenbach: We would like to set a firm date on, to specify some specific leases on the lease decision. Has ARCO set a preference with respect to the date involved with possible hope.....

Glenn Simpson: We would like to see a sale not later than



next spring.

Larry Eppenbach: Not later than next spring.

Glenn Simpson: So, we would like to see a sale not later than next spring, eariler would be acceptable to us.

Commissioner Martin: Thanks alot, Glenn. Why don't we just take a break.....

The next witness, Mr. Wayne Rogers. Identify yourself for the records.

My name is Wayne Rodges, I'm representing Alaska Oil and Gas Association here today.

Most, gentlemen of the panel, most of us are aware of the quote from Alaska's Constitution "It's a policy of the state to encourage the settlement of its lands, development of its resources, and making them available for maximum use consistent with public interest, "and I guess that's what this panel is here today for.

The oil industry, as you might imagine, supports the orderly development of natural resources of Alaska and as we proceed, the sale in the very near future is consistent with those orderly development policies, we feel. Alaska cannot be accused of rushing into disposition of its land for oil and gas development. For example, there has not been a lease sale during the last five and a half years in the Arctic Slope, in the area that contains the largest oil and gas field on the North American Continent. Some of the major productive leases, potential productive leases in the Prudhoe Bay Field, are leases that were issued in 1965.

The Bureau of Land Management has not held a non-competitive oil and gas lease drawing in Alaska since late 1967. There has never been a federal OCS sale offshore of Alaska anywhere. For all practical purposes, federal leasing in Alaska has been nonexistent for eight years. Of course, the state is not responsible for a non-availability of federal lands, but state attitudes and policies concerning their lands are extremely important to the non-availability problem of lands. The only lands available for continuous, on a continuous basis, are lands in the Cook Inlet Basin area. Due to one reason or another, 96% of Alaska oil potential lands onshore are closed to oil and gas development. As you know, the principle deterrent to the development of petroleum resources has been the lack of available lands for exploration and leasing.

Beaufort Sea development now is timely, particularly in relation to facilities being established and constructed on the North Slope. Although very expensive, we believe exploratory and development operations are totally possible in the Arctic offshore between the Colville and the Canning Rivers.

We believe all of this can be conducted without significant risk to the environment. There is certainly no reason to believe that any leases issued will not contain adequate provisions and conditions to protect the environment. Our hope is that operating conditions or any coastal management planned regulations would not be so restrictive as to render the potential lands economically unfeasible. But in our opinion, it would be in the

State's best interest to make known all such restrictions prior to the sale so that the industry would be aware of the rules of the sale beforehand. The threat of unknown restrictions/regulations would significantly lower the bonus state, lower the bonus the State could obtain, in our opinion.

To further maximize the bonus potential, we suggest the State obtain an interim agreement with the Federal Government covering any disputed lands and in any of the contemplated sale area and that any such restrictions could, that would cover such a land be announced before the sale; we're well aware of them. We recognize that this may delay the sale until early spring of 1976; however, we believe these suggestions are necessary for a successful sale.

The petroleum industry is a stable industry. It provides jobs and training opportunities and has contributed significantly to Alaska's economic base and I make reference to your own brochure for that. The economical benefits from oil and gas development has been demonstrated in Alaska.

We feel that a Beaufort Sea sale in the very near future would be to the advantage of both the state and the industry. It is quite obvious that the Nation's need for oil and gas energy is real and any delay in exploration and development is not in the best interest of Alaska or the Nation.

I wish to thank you very much for the opportunity to say my few words. I have with me a Dr. Max Brewer who is well known to all of us, is considered one of Alaska's most, foremost,

Arctic experts and he is acting in a consultant capacity for AOGA here today.

Commissioner Martin: Thank you. Before.....if I might just ask a couple of questions.

You indicated that two of you thought two points were important before the State had a lease sale.

1. was that an agreement be entered into between the State and the Federal Government with regard to the disputed land and
2. that you thought that any restrictions the State put on such a sale, a lease term should well known and published in advance.

Wayne Rodges: Definitely.

Commissioner Martin: You than indicated that you thought that that may delay a sale until spring of '76. Let me ask you this, if it turns out that either or both of the those, the accomplishment either or both of those terms cannot be accomplished in time to have a sale by 1976, would your opinion still hold? Would you want to delay the sale until those items could be accomplished?

Wayne Rodges: I think it would be absolutely essential that the, such restrictions, number one, first let me say that we have no idea at this time what particular lands will be put up should the state decide to put up offshore lands that we're in the "disputed area". That we would definitely have to, presuming that there could be an agreement, we think there could,

between the State and the Federal Government. That the finative restrictions and regulations would have to be formulated I'm sure, between the State and Federal Government and we would have to know what those are exactly. If this meant a delay, well then that's the way it would have to be. If you're trying to say ideally when the sale should be held. As an AOGA representative, i Couldn't say whether the spring of '76 would be the best date or later of this year as originally projected, as originally talked about. I think it would vary from company to company on the basis on whether they have enough exploration conducted in the area to a point of being ready, financially able. All these things take time and I say again, it would vary probably from company to company. But the point on the regulations and restrictions is imperative in our opinion, as you well could imagine, that if you issue leases offshore up there and we don't know what kind of operating regulations or restrictions might imposed on them; there's going to be a great deal of reluctance on the part of most of the industry I'm sure, to buy leases.

Commissioner Martin: I appreciate that, and I think you're probably right. I guess I'm pointing to the fact that although it may well be possible to accomplish both those things in order to, trying to have a sale by period of time, there are some difficulties connected with each of

Wayne Rodges: I can understand that.

Commission Martin: the conditions and I'm concerned to learn the importance of your feeling about this.

Wayne Rodges: Excuse me, it may be a, this is my personal opinion if I can change hats here, it may be more desirable to maybe not put up the contested lands, disputed lands or part of blocks that would be disputable. In other words, what I'm saying is only put up those lands that might be under no contest. That's a personal observation.

Commissioner Martin: Has AOGA, or do you personally have any feeling with regard to the federal leasing in the same area? Are you making a distinction in terms of your representations of environmental safety, timing and governmental policy with regard to the area inside the barrier islands as opposed to the area outside the islands.

Wayne Rodges: Yes, in the proposed sale area, barrier islands.

Commissioner Martin: And has, it will be given thought to the situation that the Federal Government considers in the position you're sitting in now testifying would your opinion be more measured about the advisability of earlier leasing?

Wayne Rodges: Well it's no secret to any of us here that the operational, the drilling operations further out are going to be technically more finite and rather more difficult to operate in, but we feel that the shallows aren't, out to the barrier reefs, operations are practical and with a low environmental risk. We would expect to borrow heavily from our Canadian neighbors, but that within the scientific community and the petroleum community. But they have operated offshore in similar

waters, similar depths that we are speaking of with success.

Commissioner Martin: Following up on your statement that I tend to agree with you that conditions or restrictions on any lease should be well known at the specific time that the lease sale is held. Would it be your feeling that at the time those are designed and written by the State that they should be of subject to further hearings or do you feel that, you have any other feeling about the structure that the State should follow

Wayne Rodges: No

Commissioner Martin: or the stipulations and restrictions?

Wayne Rodges: Well I, the commissioner knows that there are operating stipulations that go with the state competitive or state leases which are located in cessitive areas. To a great extent there are regulations and a policing of those regulations that go on right now that are considered for the most part as protective and I can't set here as a, and state scientifically or biologically that the present stipulations; let's say for a cessitive area in Cook Inlet would be applicable or adequate to a particular lease or particular area offshore in the area we are talking about. I think that those conditions and stipulations could be formulated very fast. I can't see where it would take a great deal of time to come up with adequate regulations.

Commissioner Martin: The ones which would be applicable to the Beaufort Sea area would not be so substantially different than the ones that would be applicable to the Cook Inlet if they could be prepared rather quickly.

Wayne Rodges: Very adaptable for the most part.

Commissioner Martin: I'm trying to detect whether or not you know, it would be your belief or AOGA's that sensitive relations, that they represent changes from prior stipulations

Wayne Rodges: We should have an opportunity

Commissioner Martin: but I would anticipate they would, since this is a new area, should be either hurting it or whether some process should be followed to insure that they're proper in view of industry.

Wayne Rodges: Right.

Commissioner Martin: their proper view of industry.

Wayne Rodges: Okay, we'll be very specific and say that such stipulations or conditions, we should have an opportunity to view and have some input on, whether this means additional hearings, than that may be the necessary step.

Commissioner Martin: Could I ask for, for procedure purposes, how your testimony is intended to mesh with the rather extensive testimony that AOGA will be giving in Anchorage?

Wayne Rodges: Well, mine was very broad and I haven't really prepared this for distribution to the panel, I can at a later time; but they're going to be a little more technical and voluminous and that's the word, a different aspect. They will probably get into the operational aspects of

Commissioner Martin: Will we.....

Wayne Rodges: Yeah, you'll have an opportunity.

Commissioner Martin: Thank you very much. Lt. Governor?



Lt. Governor Thomas: Yeah, I would like to ask one or two if I may. It is suggested and made, somewhere here, I can't put my finger on it right now; that there might be a lease sale and then a delay of a year or perhaps as much as two years before it would be permitted to go ahead and explore and get on with the development. If you're familiar with that, I just wondered what the thinking would be? The thinking behind this was that during that period of time more information could be generated regarding the various environmental impacts also it might tend to even out the socialological impacts and economical both of the pipeline construction now and the gas line to follow, it might just sort of smooth things out.

Wayne Rodges: Well I'm positive that the majority members of the Alaska Oil and Gas Association don't think much of that idea, to put it bluntly again it is almost to that point that I spoke on earlier and about having the conditions well known to us before we enter into it and I'm sure that you gentlemen have probably have heard, directly or indirectly, the industry's opinion on that. I just say, I feel that they would be reluctant to enter into something like that. If it was possible and say, okay here's your lease sale, and these are the conditions under which you can operate and this is the date in which you can operate. It might be more palatable, but I really can't see happening. I don't think that it could happen quite that smoothly. My opinion on this very thing is that it, been very negative that we're on AOGA to support something like this.

Lt. Governor Thomas: Regarding the capacity of the pipeline? I assume, everyone assumes that we have adequate capacity to handle any crude oil that would be found in this area without building another line. Is that correct?

Wayne Rodges: Well this is, this an assumption and I'm also assumming that some of the production could be handled in the pipeline. We get into magnitudes that dictate further transportation, well that is, that is always a possibility and we that, in the industry and work within the industry, bother to concern ourselves about the possibilities have realized that there could be another oil pipeline someday. Where it goes, what direction I don't know, but you have to consider these things I think if you want to consider the whole picture.

Commissioner Martin: Larry?

Larry Eppenbach: No, I think the Lt. Governor asked my questions.

Commissioner Martin: Okay, thank you very much, we'll look forward to your copied testimony in Anchorage.

Now.....saying before, we are also accompanied here by our own guest expert and that's Mr. Easy Gilbreth, who's the Director of Alaska State Division of Oil and Gas.

Easy, I should have said before but I didn't, I appreciate if you'd ask a couple of questions if you'd do so especially .....gas, I'd appreciate it.

O. K. (Easy) Gilbreth: Alright, I will.

Mr. Chairman, members of the hearing panel,

I'm Max C. Brewer, now a resident of Juneau. I have been asked by the Alaska Oil and Gas Association to appear before you to discuss the social economic aspects of the proposed leasing. I was asked because of my knowledge of some of the social and economic problems, including three distinct areas areas of economic boom and bust that the people experienced during my 21 years of residence in this area.

I would have been happy to appear without being asked as I am aware that the people could be wondering because of the wide spread public discussion about the potential effects of the proposed leasing.

I arrived in Barrow, in September 1950, to head the U.S. Geological Survey's Arctic Ice and Permafrost Project. I held this position for six years. During that time, except for portions of 1955 and 1956, I lived in the Navy camp 3-1/2 miles northeast of town. September 1956, I was appointed Director of the Arctic Research Laboratory; by the way, it has since been, acquired the name Naval Arctic Research Laboratory, a position that I held until July 1971 when I requested leave of absence to accept the position of Commissioner - Alaska Department of Environmental Conservation.

In 1954, I married Mary Lou Cunningham, a nurse at the old Alaska Native Service Hospital in Barrow. Our five children attended the Bureau of Indian Affairs School in Barrow and the oldest boy graduated from the ninth grade in 1970.

I served six years as a member of the Barrow Advisory School

Board and am a Past-President of the Chamber of Commerce.

My permafrost project kept the Arctic Research Laboratory from closing in September 1953 when the Navy terminated it's original oil exploration program on Pet 4.

I was appointed director of the laboratory in 1956 because of the anticipated closing-out of the camp, after completion of the construction of the DEW Line in 1957.

When I left Barrow in 1971, the laboratory was the largest single employer of local residents; some 60 in winter, more during the summer in this area.

I congratulate the State for providing the strat and environmental assessment of the proposed nearshore petroleum leasing in the Beaufort Sea. Although, preparing an environmental assessment is still a new art, the authors with limited fiscal resources have accomplished a monumental task of bringing a great amount of information together in a very short time. I would hope that after this series of hearings and the submission of additional information, the Division of Policy Development and Planning will be provided with the resources to further analyze the information and to complete a final environmental assessment. I believe that such an analysis will allay some of the concerns expressed in the draft document and provide a sharper focus concerning the extent of others.

Hopefully, my remarks will be of assistance in these efforts particularly as regards to subjects of life styles, cultural trends, and the questions that were raised concerning potential

economic impacts resulting from the proposed leasing.

The Eskimo people throughout their long history, which in the Barrow area goes back at least 6,000 years to the Denbee culture; appeared to have been oriented towards the sea. They apparently used inland routes for migration as between the Kotzebue area and the MacKenzie Delta and between Kotzebue and Barrow. But except for a few occasional groupings, including those people engaged in trading, lived along the coast. The natives tended to live in small groups, a few families in each group, but these groups could be found all along the Arctic Coast. Large population centers were few in number and appeared to have been limited to populations between 100 and 300 individuals; depending on what subsistence hunting, within reasonable dog team travel, would support during a lean year. Examples of the latter would have been Barrow, would have been Barrow in 1940. The present day Wainwright - population a little over 300. Sometimes called the "land of easy living" because of the nearness, diversity, and dependability of fish and game, and the community of Point Hope. The people however, were great travelers and traders and thus European copper utensils were found to be in use when the early explorers arrived along the north coast in the 1820's.

Chance, 1966. Reports as many as 500 natives meeting at the mouth of the Tuluga River to trade in the 1880's.

The Navy oil exploration base camp at Umiat was so named because that is where the coastal people would beach their umiaks,

umiak is the plural of umiak, to trade with the inland people. Whaling started to become an industry along the north coast in 1848. This industry which lasted for about 60 years, peaked in 1905; providing not only more ready access to western trade goods, but it also wiped out the business in many of the inland traders. It forced many of them to move to the coast. During the peak price years the baleen from a single whale could bring \$8,000. That from a very large whale, \$20,000.

In the 1880's, numerous trading posts began springing up along the coast; bringing with them the peoples first real brush with the dollar economy. It didn't take them long to become familiar with it either. For example, Stephenson found in 1908 that some native whaling captains were maintaining as many as five or six boat crews and paying each crewman up to \$200.00 for a six week whaling season. That would have amounted to about a \$12,000 payroll for the captain, who also had the expense of outfitting the boats and providing all food and supplies for the crews.

The establishment of trading posts also brought the first permanent non-native residents to the Arctic Coast. As the maps of the North indicate, they competed with the early explorers in attaching their names to many geographic points.

Schools were established and medical missionaries arrived at both Barrow and Pt. Hope in the 1890's.

The loss of six whaling ships off Barrow in 1897 stranded 275 whalers, for the winter, almost doubling the local popula-

tion and resulted in the first reindeer arriving at Barrow via the great overland drive, relief drive, the following spring.

The final demise of the commercial whaling industry in 1915, in effect brought a economic bust to the existing dollar economy. The economy was revived in the early 1920's with the increase in the price of fur, particularly that of fox fur. Annual incomes of \$3,000 - \$4,000 were not unusual and occasionally reached \$7,000. This occurred about the time that Detroit was proclaiming the \$5.00 per day or \$1,200 per year annual wage. Trappers ranged far, a few going as far as Northern Banks Island in Canada for a five year trapping expedition; this personal communication of Mr. Thomas P. Brown. The fur business began dropping with the depression in 1929 and the bottom fell out of it completely, even for the short-haired furs in 1944/1945.

Reindeer herdings, starting with the modest remains from the overland drive in 1898, in spite of many troubles; increased rapidly, particularly in the 1920's. Whereas the herds numbered 3,771 animals belonging to 133 herders and owners in 1917. By 1935 Barrow residents are estimating to have owned about 30,000 reindeer. Wainwright residents about 22,000. Herding however, is not without its problems, particularly since herders had to live with the deer seven days a week and most wives preferred to live in the villages. By 1940 because of over-grazing disease including hoofrot, predation problems with adequate herding of the deer population and a lack of markets for the meat, the deer herds were only a fraction of what they'd been. Herd located in

Cape Simpson area escaped westward to the wilds in 1942/42. Last herd, about 150 animals, escaped to the wilds in the Talpargok area in 1951.

The deer herding operation basically was a deer farming operation, largely under the control of the Bureau of Indian Affairs. It could not be considered a truly subsistence way of life, neither was the farming in tune with the peoples cultural way of life.

The big change in life-style, one for which the Draft Environmental Assessment, would have been most appropriate; occurred in the years 1944 to 1946. The Navy oil exploration base camp, originally intended for establishment for the known oil seats at Cape Simpson was established about 4 miles northeast of Barrow in the fall of 1944. Originally operated by Navy Seabees, the camp was turned over to civilian contractor management in 1946. The operation brought the first sustained year-round, long term, cash employment for many residents in Barrow as well as extensive training in the various skills. Full families, brothers, and brothers-in-law often were trained in the same skills. For example, the Hopsons, Browers, Ittas, Nisnayinnnas became carpenters; the Faniguos, Toolaks, Optics, Edwardsons became equipment operators. Others became mechanics, plumbers, welders, boat operators; the latter particularly with Coastal Geodetic Survey of the Northern Coast. These family skills still exist today. Many of the young men who went to work for the relatively high wages, in those years, have been



almost continuously employed year round for 30 years.

Two big changes in the life-style occurred rapidly. People flocked to Barrow from the many small settlements along the coast in order to obtain jobs. It was now possible for them to be near the school and medical services which they desired because there was also the possibility of earning a livelihood. Additionally, living was easier and amenities more available. Whereas in 1940, Barrow had a population of about 300 people and settlements were scattered about one day's dog team travel required along the coast.

By 1950, Barrow had a population of 800 and the coast between Barrow and Barter Island, or Kaktovic, was deserted of natives. Only one family, that of George and Nunnie Woods, on the west fork of the Colville River remained in this entire 350 mile stretch of coastline. Twenty-five years later, Mrs. Woods still lives and fishes there much of the year. George and three other children are buried there. However, this stretch of coastline is still devoid of native settlements.

In 1937-1938, the Nimmunamute people, which is by the way, it also means people; originally from the general area of the Killik River and who had moved to the coast by 1920 began moving back inland. 1949, these people began gathering of the present site, Anatuuvuk Pass, in 1951 a post office was established there. The school and a bush airstrip were constructed in 1960. These people by choice and numbering about 1200, about 120 individuals, from 17 families have remained more closely identified with sub-

sistance living.

The Barrow area suffered another economic bust with the phase-out of the Navy oil exploration program in September 1953. Although, hunting could not support more than about 300 people, the economic bust was not as painful as in the earlier times because several forms of income were available. Unemployment insurance, aid to dependent children, old-age pensions, and general relief. Additionally, a few jobs still remained with several of the service agencies including six jobs in the camp.

It is interesting to note that although there were some outward migration to Fairbanks, Anchorage and even further south. There was zero outward migration to the old abandoned coastal settlements. Those settlements that had been abandoned seven to nine years earlier.

The economic bust was short lived as construction of the DEW Line began in January 1955. The Barrow camp was reactivated and expanded to handle a major construction program of prefabricated units and to provide major logistic support. This brought full employment of the employable local residents through mid-1957. The following economic down-turn was less severe this time as considerable employment remained at the various DEW Line stations and at the camp. Additionally, the Arctic Research Laboratory operation had begun to expand. More government services requiring year round employees were in existence and tourist starting in 1954 were beginning to visit Barrow during the summer season. Some residual employment at

nearby DEW Line stations also existed for Wainwright, residents living in villiages of Wainwright and Point Lay. The essentially full employment of local residents to Barter Island DEW Line site, which began in late 1953, remains to this day. The construction of a new junior high school and housing; a new hospital and housing; the new Naval Arctic Research Laboratory building and aircraft hanger; the new village airstrip and later the extension and surfacing of that airstrip; and the construction of many new homes kept the Barrow economy at moderate levels during the 1960's. There were economic ups and downs and many of the construction programs were seasonal. Probably the greatest boom however, and one that made the greatest, the greatly improved housing possible, was the provision of natural gas available from local Navy wells to all the homes in Barrow in late 1964. This reduced the winter monthly heating cost by 60 to 75%, dropping some costs for individual homes from near \$200.00 to the range of \$40.00 to \$50.00 a month.

A native corporation was orainized to operate the natural gas utility in the village as well as the Bureau of Indian Affairs' utilities, thus providing additional stable employment. Employment for the Barrow residents in the oil fields at Prudhoe Bay began opening up in late 1968 and early 1969. One drilling company alone employed 24 local residents, six at each of four drilling sites. Usually the schedules called for four weeks of work and two weeks back at the village. Some concern was expressed at first as to whether the workers would accept the

idea of being away from their homes for such a period. However, it was explained that the periods were remarkably similar to the old hunting schedules of three or four weeks out hunting and then a couple of weeks back home. This proved to be correct and the same company mentioned above informed me that personnel turnover was somewhat less for the native employees than for the non-native employees. Geophysical crews during the winter seasons also employed considerable numbers of local residents from both Barrow and Kotzebue. In most cases, those employed were younger men under 40. During this period the State Employment Office was established in Barrow.

The delay in issuance of a permit for the pipeline brought a marked decrease in petroleum related employment in early 1971. Again the various social services, including the unemployment insurance, cushioned the impact. The real cushioning however, was to be found in the local service employment; previously generated, and the still existing strong family ties which provided for a high degree of economic cooperation.

The passage of the Alaska Native Claims Settlement Act in December 1971 and the creation of the North Slope Borough government the following year provided two resources not previously available to the residents of the North Slope. Capital and a governmental structure with sufficient areawide powers and potential sources to accomplish more than routine governmental house-keeping chores. The proposed budget, about \$3,000,000 for the borough's first year of operation was almost three times the

estimated total cash income of the entire Barrow population; only a little more than 10 years earlier, Rice 1965. The first payments, in a payment to the Arctic Slope Regional Corporation, separate from the borough government and organized as a result of the Native Claims Settlement Act, was just over \$7,000,000. The result in substantial employment necessary to provide borough government services and the internal employment generated by the Arctic Slope Regional Corporation will provide a stability in the local employment sector never previously enjoyed. Additionally for the first time the stability in employment is under the control of local residents rather than the federal agency or a transient construction contractor. A new village, Nuiqsut was established in the west fork of the Tuluga River near where the west fork joins the main channel, in the fall of 1973. About 30 families who previously lived in Barrow now reside in the new town. It's establishment was financed by the Arctic Slope Regional Corporation. Under the terms of the Native Claims Settlement Act it would appear that the village eventually might receive title to either three or four townships, probably to five or excuse me, receive title to either four or five townships, probably five of surface estate. Some on each side of the Tuluga River. The land on the west side of the river would be from within Drilling Reserve No. 4. Socially, culturally, economically, and through close family ties these people still are very closely aligned with Barrow. From the stand point of life-style the new village has many of the wants that Barrow

residents have. For example, they've already planned for a store, a school, a combination health center and post office, a power and light plant, an airstrip, and sewage disposal. The latter two items proposed some very difficult and costly problems in this iced-ridged perma frost area. Additionally, through a limited fishery, although a limited fisheries resource is available. The village is located an inconvenient distance, about 20 miles from the sea.

The initiation of constuction of the pipeline in the spring of 1974, provided additional employment for Barrow residents. including for the first time a few of the young women. However, because of many other employment opportunities available this unemployment proportionately was not as great as it might have been in previous years. Also because of Barrow's location away from the pipeline route, the pipeline impact on housing, schools, utilities, roads and governmental services portionately has been far less than in the cases of Fairbanks, Big Delta, Glennallen, and Valdez and even Anchorage.

I believe that certain conclusions can be drawn from the information presented. In life-style, the people on the North Slope have during the past 30 years pretty well determined what their life-style will be. Basically it will be one of community life with most of the amenities and problems associated with life and the urbanized areas of the state. Their self established priorities in education, health care, communications, transportation tend to guarantee this result. They have been

successful to perhaps a far greater degree than in many other areas of the country in establishing degrees in the pace of living within their region. For instance at Barrow, a city life-style with the hectic pace and the social problems common to any urban area.

Wainwright, a small town life-style, a reduced pace and more reliance on the product of the land and sea.

In Anaktuk, an isolated life-style with heavy reliance on the products of the land.

This is not unlike the situation found in many other areas in the United States, for example, in the New England area. However, the residents in the North Slope may be able to move more easily between one life-style and another than can the residents of some of the other areas of the country. Point most often misunderstood is that the residents of the North Slope now are in control of their life-style rather than it being controlled by outside interest, including the state and federal agencies.

In the area of cultural, the culture of the people in the North Slope has been in a state of dynamic change for the past century. The culture experienced its first boom and bust in the dollar economy before Anchorage was born. It survived its flood and rebuilt before Fairbanks was flooded. It spearheaded the pipe for a political settlement for the Native Claim and it has survived the many, the most intensive and long term investigation by the scientific community of any area or culture in

the State. The cultural changes henceforth, perhaps will be somewhat less dynamic. More generally paralleling those changes nationally. For example, mini-skirts arrived in Barrow, although perhaps with somewhat more discomfort in winter about the same time that they became popular in California.

The strong pursuit of education particularly since the 1950's and evidenced by the local appropriation for a college, the fact that so many residents have been educated down south; the developments in communication, the high mobility of the people, and a natural desire for the material conveniences has set the cultural pattern. Again the local people are in control of what cultural changes are sought, accepted, or rejected.

In the area of cash economy, Barrow is on cash economy basis and has been on a cash economy basis for 30 years even though the economy has had some wild fluctuations. With local control of considerable amounts of capital and with the high level of local employment and Regional Corporation employment these wild economic fluctuations will be smoothed out to more nearly reflect the economy of urban areas of the state.

Hunting will still continue to be supplemental although to a greater degree because of the dietary preference, much as it is in other areas of the state where moose fills out the winter larder.

Other evidences supporting the fact of a cash economy are the present population of Barrow is approximately eight times the maximum population that could be supported by a subsistence



economy and the implications of their recent sales of borough bonds from the \$49-1/2 million local bond issued. Quite candidly, I have never known a subsistence economy profit so many bankers.

The social economic impact of the proposed leasing. The nearshore Beaufort Sea area proposed for leasing is an extension of the North Slope area already leased for oil and natural gas exploration and to some extent already explored and developed. The areas already leased include lands immediately adjacent to the new village of Nuiqsut, portions of the Colville River Delta including some offshore lands. All of the Kuparuk, Sagavanirktok, and Chavilik River Deltas; including islands and offshore lands. all or portions of several of the offshore barrier islands; including Flaxman Island and most of the bay at Prudhoe. So that as we look at the impacts here, the leasing has already occurred in the areas about which much of the environmental assesement discusses.

Oil and gas had been discovered beneath lands already leased and development is apparent. An oil pipeline is being contructed, one exploratory well has been directionaly drilled beneath Prudhoe Bay and two wells are being drilled from gravel pads on offshore islands; third is I understand being drilled or about ready to be drilled on Flaxman. Social economic impact of the earlier leasing on the North Slope residents has been great. In addition to providing more local services and support because of the state's improved fiscal position after the 1969 lease sale, the need for a pipeline permit probably was the

single most effective lever available and used for obtaining passage of the Alaska Native Claims Settlement Act. In affect then, this draft and environmental assessment really addresses what new or additional environmental impact might be expected as the result of the proposed new lease sale.

An item of great importance to bush communities, including those in the North Slope is the fiscal health of the state. Unless the state's fiscal condition is in good shape the bush communities cannot obtain the many services that they seriously and often desperately need in the fields of education, the health service including the water treatment and sewage disposal facilities, social services, fire protection, police protection, and capital improvements. The maintenance of this fiscal health must always be considered in any social economic assessment including that of the proposed lease sale. Other than the indirect effects as they might be reflected because of the State fiscal health, the proposed Beaufort Sea lease sale would be expected to have a minimal social economic impact on the communities of Cactovik, Barter Island, Anaktuvuk Pass and Wainwright. All three communities are well removed from the proposed lease area for hunting and fishing, hunting or fishing. Even a possibility of a significant killed water fowl which has been postulated as being possible in the event of a major oil spill. It would be expected to have minimal effect on these communities because of their location, patterns of the offshore appearance, the areas of concentrated nesting and feeding of the

water fowl, and their patterns and migratory flight.

Questions of employment to residents of these three communities also would be little influenced by either the proposed lease sale or the timing of the proposed lease sale. The employable residents of Cactovik already have employment at the DEW Line site. Those residents at Wainwright and Anaktuvuk Pass who are qualified and who desire work in the oil fields would still have the opportunity for work since development of the existing oil fields is a long term process and will continue for several years after the completion of the pipeline construction.

Potential for social economic impact on the communities of Nuiqsut and Barrow would be expected to be somewhat greater. Although that not necessarily much greater than the impact now existing with full exploration and development of the already executed Prudhoe Bay leases.

Regardless of the leasing or the timing of any potential nearshore Beaufort Sea leasing. The employment opportunities for the employables of both communities and by employables I am talking and also about those who are willing to leave the area for the employment. The opportunities would appear to be very good for a number of years. However, it is possible that the pipeline construction project may be putting a little bulge in the present employment picture. After completion of the pipeline construction, residents of both communities will have opportunities for continued work in the development of the existing Prudhoe fields and the exploration of Naval Petroleum Reserve

No. 4 and in the construction of long wated community facilities. Any major social economic impact, if there should be one, would be expected to occur at Barrow. Should the Navy greatly expand their use of that area, the Barrow area, as a supply base for support of large scale petroleum exploration within Petroleum Reserve No. 4 and there its.....

the proposed lease area would not add any new environmenal risk to those already potentially existing; to the marine environment as a result of the earlier leasing. However, it could increase the potential oil pollution to the marine environment by putting more marine acreage under lease. Any cronic oil pollution could have an adverse effect on the small fishery with a maximum of about 30,000 pounds annual production that has existed on the west fork of the Colville River for many years. Care would have to be taken to fully protect this fishery and any potential development of the area. The establishment of the new village of Nuiqsut may have a significant impact on this fishery. This is particularly true if the figures shown in the assessment would apply to every family, this is the use figures.

Cronic oil pollution could effect any hunting for seals that develops because of the establishment, of the establishment of the village of Nuiqsut. A major oil spill oceanward of the barrier islands at the wrong time of the year, the month of May and September particularly, would if effective clean-up were not accomplished; have a potential for damaging the whaling in Barrow.

To some degree adverse sea ice conditions also effect the whaling catch at Barrow and in some years has reduced the spring or main catch to zero.

The greatest potential for social economic impact on the village of Nuiqsut although not related to the proposed Beaufort Sea leasing would be the nearby discovery of natural gas because of drilling on either, already leased state lands or drilling on the adjacent area of Pet 4. The discovery would have to be near by, within five miles because of the economics of running and connecting the gas line. Most of the residents would consider this to be a very favorable impact because of the attendant reduction in heating cost.

Basically the proposed leasing of the nearshore Beaufort Sea area will not add to the social economic impact on the North Slope residents. Beyond those impacts already in progress significant areas of the marine environments already are leased. Most of the river deltas, delta areas, are leased. The area adjacent to Nuiqsut is already leased and the Navy has chosen the nearby portion of Pet 4 for its initial exploration program. The Navy already is drilling a well near Cape Halkett in that area. The indirect social economic impact can be moderated by providing for orderly exploration of the proposed lease area in conjunction with rather than separate from exploration on the existing leased areas. This would allow for the development of an inventory of the oil and gas reserves in the Prudhoe area including the nearshore section. Once the inventory has been completed

orderly planning can ensue for the development and production of any oil and natural gas found in the proposed lease are. Without a nearshore inventory much of the planning for this area must be made in the dark; potentially producing unnecessary environmental impacts. If early exploration and inventoring are accomplished it also will provide more time for planning for the development and production of any resources discovered. Also there would be more time for specific studies of specific areas should that need be indicated. To minimize any adverse social economic impact, exploration and development must be orderly and accomplished under meaningful and environmental controls.

Mr. Chairman, I have a list of suggested references to accompany the written report but these may be of assistance to the others. I thank you.

Commissioner Martin: Alright Max, thank you very much. That was very complete and should be very helpful. Do you want to submit that at this time or do you want to hang on to that? We would very much like to have your statement in writing if possible.....

Max Brewer: Mr. Chairman, I have a few typos in this, these will be corrected and will be submitted.....

Commissioner Martin: Alright, I appreciate that

Max Brewer; as read except for the couple of the ad-libs.

Commissioner Martin: Thank you much and I appreciate the extra citation you're going to give us here which will be a help I know. I want to comment, initially I note your request that the

what is being called the Environmental Impact Statement but which I think is much more appropriate called an environmental assessment. At least because it doesn't meet the kind of requirements that we've learned to understand in an environmental impact statement has at the federal level. I appreciate your statement that it should be finalized at some point after the hearings and I can't tell you what the decision is on that now because it's a decision of the Division of Policy and Planning, but I assume it will be finalized and we look forward to your help in doing that. I'm, I think there should be a statement regarding the nearshore inventory and the way that that could relate to the State's ability to lease, to conduct or has conducted that inventory and to make future actions contingent on the results of that inventory. Do you have any thoughts on how that could be done in the leases or after having committed yourself to the lease sale?

Max Brewer: Well, Mr. Chairman, as I understand it people can go out and run all sorts of geophysics, they can come up with very extensive interpretations as to the possibility of a reservoir but until they actually sink an exploratory well they don't know what is there and so that for instance; in many, much of the information that is being made public in the State today; people talk about reserves and reserves are the best calculation of what oil is there and can be recovered and the computer guesses as to how much oil might be in certain area of rock. Well, it's better than nothing but it's still a guess and so that any plan-

ning or development of the offshore area there must know essentially what is to be developed and until that information is available work must progress on the best by using the best information available; and it is my feeling, that type of approach is somewhat in the dark like tying one hand behind him and telling him to do the best he can. But there is no way of coming up with an inventory of reserves without sinking exploratory wells. Now I think that one of the areas that is not been made clear in the assessment is just how much of the offshore area, the island area, is already under lease and therefore not only exploration but for development with the proper types of permits; and it has appeared to me to be not only somewhat awkward but certainly negating good planning and I would assume that without the best planning that there is more risk of environmental problems by having only half the information available.

Commissioner Martin: I think you're thoroughly entitled to be known as an expert on a state permitting process. I'm curious to know what your judgement is that if leases are sold in the area under question or part of that area, and exploratory drilling takes place following issuance of those leases and if we determine because of that exploratory effort that there are additional problems or during that period you tell me that there are additional problems environmental or technical problems with future development of this area. Is it your view that the State's permitting process is adequate to supply checks on the pattern of development in that area that would be satisfactory to you or



to the State in terms of protecting the environment and the social economic values there?

Max Brewer: Mr. Chairman, I would hate to comment on the actual drilling permits when we sit with the Chief of the Division right here. However, it's my understanding that if something comes up in the actual exploration or should the results of that show that certain precautions are required then for the permit to drill the next well would so incorporate it, these. I believe that is the case for instance, in the Gulf of Mexico and here and I would be extremely surprised if that were not the case here in Alaska. However, with the Chief of the Division for the final answer I would .....

Commissioner Martin: Well I asked that for you know, for your attention simply because you also have quite a

Max Brewer: Yes.

Commissioner Martin: strong hand in the State permitting process

Max Brewer: Yes.

Commissioner Martin: and actually have some impact on that process aside from the Division of Oil and Gas.

Max Brewer: From the stand point of environmental protection the regulations already in existence would provide for that protection. For instance, any discharges to the environment require permits and this would include such of the things as siltation of the question of drilling muds. Additionally the, any construction of pipe that might be buried again requires

a permit with conditions regarding potential siltation, timing of the year to protect the marine resources so that you have that. If you were to go in and want to put in a causeway the actual water quality regulations, the discharge regulations because of the material, would come in. Those would, permits would have to be obtained and the conditions of those permits could be flexible to consider the environment being addressed. The similar types of permits were given for many other operations approvals in the Prudhoe area and in each case the department to make the conditions fit the environment as it existed.

Commissioner Martin: Well I appreciate that. I'm sure you understand that the concern is that at the point of leasing; especially at a time when we, by your own statement, have somewhat of an absence of information available, you know for as a basis for proceeding ultimately towards development, it's very important to know what you lose at the time of the lease as opposed to what you retain in terms of control and regulatory ability and that is one of our chief concerns.

Max Brewer: Mr. Chairman, I think that the decision, the decision has been made to lease offshore in the nearshore Beaufort Sea with the earlier sale and I think that one of the things, very much upper most in peoples minds is that the way that the development be done properly with all the safe guards possible, I think the one of the big questions that we're looking at is for concerning the plan. Then for considering the area of the unit and that is the reason I addressed it in the dis-

cussion.

Commissioner Martin: Would it be a fair conclusion from your testimony that from an environmental and social economic standpoint xtent the, there would be no great distinction between the areas already leased offshore as part of earlier sales and those that are being proposed for lease now?

Max Brewer: The area inside of the barrier islands?

Commissioner Martin: Yes.

Max Brewer: Then that would be correct there is a vast difference when you go beyond the barrier islands and the pass itself becomes a very great influence. But I would say that inside the barrier islands, the barrier islands, and those areas of the state lands that can practically be reached by directional drilling.

Commissioner Martin: Thank you. Do you have any remarks or comments? ( addressing the panel)

Lt. Governor Thomas: No.....

Max Brewer: I'd be very happy to make sure that you have a personal copy of this.....

Commissioner Martin: Larry?

Larry Eppenbach: I as well appreciate your testimony on the matter. I notice

The Audience: Could you speak a little louder?

Larry Eppenbach: Can you hear me? I'll try to speak up. I notice on our hearing schedule that you are also scheduled to appear in Fairbanks, I wonder whether you are planning to

suppliment your present testimony there or will you testifying on a slightly different topic or what are you planning to do?

Max Brewer: My thought for Fairbanks is that I would like to talk about perma frost, sea ice and some of the more technical aspects there concerning the environment. I felt that by breaking it up that it would allow more manage, unit and I very much preferred to talk about the social economic here at Barrow.

Lt. Governor Thomas: Dr. Brewer, on the social economic question, I noted that you talked about the State's financial condition and as you know, and as that pamphlet illustrates, there are several financial options that we have to raise funds for the State, they exist as alternatives to the leasing. Some of them have their own social economic impacts, one in particular is being considered by the legislature today is a tax on petroleum reserves and I wonder if you would care to comment on any of the social economics impacts that such a tax might have in this area?

Max Brewer: I have commented earlier that considering the policy of taxation of reserves that it has some of the undesirable aspects not only of promoting very rapid development or too rapid development because of the question of capital tied up. It has a tendency to hold down any advanced knowledge because the minute you come up with a reserve then it's liable for tax but if you just own it but don't know it you're home free as regards so that there is , it detracts from acquiring any more information than you actually need for the immediate operation.

Therefore, from the stand point of planning and predict trying to develop the resource to promote the leaset damage to the environment. Again you're doing it with a hand tied behind you. From the development stand point of course, such a taxation actually makes some areas, it deprives them of being economic; so that I have commented that as the disavantages it also tends to make people try to cut corners and in some of their development. This is, I think such discussion is applicable, basically world-wide and to many industries; certainly in college I was well aware of these very real problems. In my talk when I mentioned the social, the health, the State's fiscal health having a direct impact; what I was trying to say there is that unless the State has no financial worries the many problems of the bush go by the boards and there are many problems. For instance, the estimate, this is an estimate of over four years ago for water and sewage here at Barrow, the facilities; was \$17,492,00 and today would be over \$30,000,000 and we still use honey-buckets here in the village and then what happens after you dump the honey-bucket is still a bit of a problem. And this certainly has very severe problems.

Commissioner Martin: Easy, do you have any questions for our guest?

Easy Gilbreth: I'd just like to ask Dr. Brewer one question. Dr. Brewer, you're an environmentalist and basically a conservationist; you're familiar with the operations that have been carried on at Prudhoe, you have seen the damage that occurs there

but considering the social economic problems whether they be good or bad; the environmental problems, whether they be good or bad; development on the North Slope, whether they be good or bad; I just wonder in your own personal evaluation do you think it's been good or bad that Prudhoe was discovered?

Max Brewer: I think from the stand point from the State of Alaska, from the standpoint of the residents of the North Slope that the advantages far outweigh the disadvantages. There have been some disadvantages. I would say that from the stand point of the development of the fields in the Prudhoe area, that probably more care has been used there than any other development in the oil field game. There were some bubbles at the start as people went through their learning curve. There's some unhappy roads in the area, there's some so-called winter trails that we would rather not have. There have been some problems with the sewage over there. There have been items of tundra tear-up that one would prefer not to see, but with the exception of these isolated things and most of them occurred on the learning curve as people were getting their feet on the ground; I would say it's been a model development. I know of no other one in North America that can touch it as far as being, having as much environmental concern and attempts at doing the job right.

Commissioner Martin: Dr. Brewer, thank you very much and we look forward to your testimony in Fairbanks as well.

At the head of our agenda today we had the Arctic Slope

Regional Corporation and I, that at the head of any of our lists of the representatives of local government I note that Eben Hopson is here and Eben, I want to know if you're interested in testifying today and if so I would like to invite you to come forward now.

Eben Hopson: Mr. Chairman, I don't have a prepared statement at the moment but I would like to make a few remarks, I promised you I will certainly

Commissioner Martin: Would you please.

Eben Hopson: try to answer a draft of the lands

Commissioner Martin: We'd appreciate hearing your remarks now and you're welcome to, if you wish you're welcome to submit a written statement any time until June 15 and we would like to have you do that. We're glad to be here, we've enjoyed it and we've had a chance to look around town. It's very nice to be here. It's my first visit and I appreciate the opportunity to be here.

Larry Eppenbach: It's really growing, it's a beautiful hotel you have here.

Eben Hopson: Thank you Mr. Chairman, Lt. Governor, Members of the Panel. I'm not really sure whether you're making the right move by asking me to make a statement at the moment. I have some mixed feelings about the whole development concept; particularly on the North Slope. Basically we have issued a statement, reference to the Beaufort Sea sale and perhaps in the general area of development within the North Slope which is

now considered an industrial area; and that statement has said that we do not object to any development providing that adequate precautions are adhered to. (Those concerns that have been expressed nationally perhaps by people concerned in these areas) provided that those precautions are strictly adhered to, that we basically do not object to the development, particularly in that area which is the North Slope.

In addition to some of the legislative restrictions imposed on the local government of the North Slope Borough, we have encountered other difficulties within the state government; and Mr. Chairman, I'm going to, this is going to be directly aimed at you, not because you're here, because you came in at a later time when these particular problems entered in the department that you undertook to take. And indirectly it does focus on the the possibilities of further difficulties by the State in reference to the Beaufort Sea effort. Under the municipal code, which is a state statute, new municipalities are granted the right to select 10% of the State's selective lands within their own areas. Mr. Chairman, we have selected perhaps 60% of our entitlement as far as acres entitled to selection by the North Slope are concerned.

Previous commissioners, which you have succeeded, attitude and perhaps it may, I mean the Director of Lands, I'm speaking of the Director of Lands not the commissioner, attitude, and perhaps it was the department's, I'm not really sure,; was that it appeared to us that they were revamping their own regulations



as to the administration of lands within the State to suit their own purposes so that under no circumstances were they able to approve the selections of the North Slope. We've argued back and forth, we've had several meetings with the former Director of Lands; but to have control of an agency that administers lands then it appears that under no circumstances was the State intending to approve the lands selected by the North Slope, which they're entitled to under the statute, we have to do something. So, finally, about a month ago, Mr. Chairman, we filed a suit against you as the head of the department, and the Division of Lands; attempting to have those selections approved. Now we're in an municipal government according to a code, the municipal code; we are a humble, shattered borough. When the legislature implements the constitution which created these local governments, I think they were very serious in saying that we ought to afford the people the right to govern themselves. This procedure is part of that constitutional entitlement, Mr. Chairman. We've become very upset when something don't seem to work, perhaps because of one person, who in this particular instance administers the lands for the State, the Division of Lands.

My remarks are here said to put you on notice and the action has to be by the assembly if we go this route, but I want to put you on notice that if not for the purpose of forcing the State to approve our land selections in Prudhoe Bay we intend to file suit against the opening or the sale of any lands in the Beaufort Sea area. It can go both ways we will have legitimate arguments

against the development or the leasing of Beaufort Sea lands offshore; and I'm being very honest with you, I don't like to - my basic policies, if I can't face a guy and tell him straight to his face I don't do anything. I'm putting you squarely - I'm putting it squarely in front of you, I never operate on anybody's back, if my intentions are clear, I like to operate in an open field.

Aside from that, Mr. Chairman, now that I've said my piece, let me suggest to you that perhaps as a general policy on part of the State, attempting to lease the Beaufort Sea offshore, you're applying a bandaid to what you might need on a complete wrap around the head. Maybe, maybe a sling around the arm and a splint down the leg.....

.....implicates exactly like they did in Prudhoe Bay to develop NPR 4. When you look at the map would you mind, Mr. Chairman, pointing to the area of Beaufort Sea where basically offshore we intend to operate.

Commissioner Martin: Yeah, this area right here.

Eben Hopson: Now point out on the map exactly the size of NPR 4.

Commissioner Martin: Goes through that here over .....

Eben Hopson: Goes straight line south from Point Lay all the way past the 68th parallel, meeting again with the Colville River. It's 23 million acres. I think there is the answer to the State's financial problem. I think generally, Mr. Chairman, The North Slope Borough is prepared to assist in any way so that

not only the North Slope Borough but the State as well can benefit from this tremendous effort that is now beginning to get under way and that's the development of NPR 4.

I just discovered from contacting my office that if there is such a thing called the "Impact Statement on Beaufort Sea" my office has not been sent a copy. We're just prepared at the moment to, as I said earlier, we are preparing a written statement; and, as I said, we will file with your committee a written statement from the North Slope Borough. What I'm really saying is that I don't think a total effort is being made on the part of the State to recognize the rights of the North Slope Borough. As you consider overall the fact that boroughs are created by the constitution and implemented by state law. We have a tremendous amount of resources available to the North Slope Borough, experts in every conceivable area that the State is not involved in; that if cooperation is requested, the North Slope Borough is willing at any time to assist your department, as well as the Governor's office.

To provide some additional information, I think Mr. Brewer's statement was very well taken, but I'd like to at some future date perhaps add to what he's enumerated as far as the historical information is concerned but short of a written testimony, Mr. Chairman, I'd like to conclude my remarks.

Commissioner Martin: Thank you, Mr. Hopson, I appreciate your remarks, and may I just respond briefly. I'd like to say that I genuinely appreciate those, because we're different on

serious matters of policy on this question throughout the State, wide differences of opinion, and I appreciate your remarks, particularly as they fit in with the other policies and considerations that you mentioned. With regards to the municipal selection problems, which is not our precise subject today, but as you pointed out is related unquestionably. Let me say that it is somewhat of a legacy that we have from a prior administration, one which we have found and are now assessing. It's a problem that affects not only the North Slope Borough but affects every municipality in the state with similar problems, and any decision that this administration or my department makes on that will have far-reaching consequences in the State, and that's the simple reason that it stands where it does today. It's not a singular problem. With regard to Pet 4, as a point of information I would like to indicate to you that as you know from our past friendship I've been in Washington for the last few years and dealt with that problem very extensively, and approximately a month ago the governor asked me to head a state task force to deal with a Pet 4 policy for this administration and your remarks would be invaluable in thinking that one through. We anticipate having a policy on that score in the very near future; and I mean by that, in two to four - six weeks, because it is very active in congress and any time loss now is very difficult. If I could, I would like to turn to you at a later time for, and you can do in your testimony if you'd like, for more detail as to the way in which you see that solving of the financial problems to the

State. I think I understand how that should be done. I'm not entirely certain in my own mind at this point that we're going to be able to accomplish all that we want to in Congress on the Pet 4 issue although in terms of revenue sharing I'm sure that you understand the other aspects of our problem. But I would like to come back to you on that one to let you know that we are very actively pursuing a policy on that.

On the point of the environmental statement, the assessment, I - if it has not arrived, it was sent out by our Division of Policy Planning. I find it almost incomprehensible that it's not here and I'm quite alarmed to find that it was not about. I will leave mine and leave others with you here that we brought so we don't go through another delay. In any case I acknowledge that and am very sorry to hear it so, I hope that as a part of your written submission that you will respond to the Beaufort Island sale on its own merits and on the merits as they will be used by the government here as well as in their relationship to Petroleum Reserve No. 4 probable to the municipal selection problems because at a certain point we are going to get a complete analysis of the sale itself before even dealing with it with respect to each others policies, so I would certainly invite you to do that

Eben Hopson: We'll be happy to do that.

Commissioner Martin: Thank you again very much and we'll look forward to seeing your statement.

I see that President Upicksoun has come in. You're at the

very top of the list and we look forward to hearing your statement that you've prepared at this time.

Welcome to the hearings, I haven't seen you in some time, since we were in Washington and I'm very glad to be here in Barrow and am looking forward to your statement.

Joseph Upicksoun: Thank you, Mr. Chairman. We have younger men traveling now and I kind of like to stay home once in awhile.

Mr. Chairman, I have a prepared statement. It is not a corrected copy. When I am finished you will have a corrected copy. Also, I promised Dave Jensen and Mike Harper that I would have a copy of the Arctic Slope Regional Corporation's statement. With this, Mr. Chairman, I will begin my statement and it is a testimony regarding Beaufort Sea nearshore petroleum leasing.

For the record, my name is Joseph Upicksoun, I am the President of the Arctic Slope Regional Corporation and I am here today representing the position of the Arctic Slope Regional Corporation and the shareowners that make it up. I wish to comment and express the position of the Regional Corporation on the proposed Beaufort Sea Nearshore Petroleum Leasing Plan.

I would express at the outset, that the area of our greatest concern is the Colville River Delta and the obvious concern that the Beaufort Sea then spreads east and west from the proposed lease sale area to much more extensive offshore area. It is perfectly reasonable to say that the proposed Beaufort Sea leasing plan implies a much larger potential, future program of leasing

and development.

The people of Nuiqsut, members of one of our sister corporations of the region, depend on the Colville River and the Colville River Delta for whales, fish, for migratory birds, and mammals of the area in order to sustain their way of life. This concerns us as a first priority.

Now following my statement will be Thomas Napageak from Nuiqsut, who will tell you what his people feel about the development in the Colville River Delta and the Colville River area.

Having said that, we also recognize that there is an economic sphere that must be considered whether as enemy, friend, or neutral. We believe that the economic development activities that could take place in our regions are not necessarily exclusive of the environmental needs and patterns; in fact that they must not be exclusive, that they must be compatible and complementary.

We believe that economic development and the intelligent and productive use of our traditional lands and environment can be mutually beneficial...but that this will only happen with intelligent and intensive planning.

It is apparent from numerous public statements and the press, that the proposed Beaufort Sea lease sale comes at a time of so-called 'sheer necessity' for the State of Alaska in terms of its fiscal position. The State of Alaska has taken the position that budget restraints alone will not solve their present economic and fiscal problems. I do believe, however, that budget

restraints far greater than those already imposed would do a great deal to solve the problems faced by the State at this time.

It is clear to us that the state legislature...in their process of examining the various methods available to solve fiscal problems...have tried to pay close attention to the developing native corporations, and to their testimony. We would like to thank the state legislature and especially the Chairman of the House Resources Committee, Nels Anderson, for so ably understanding our position. As is clear now to many citizens of the State and to many of the legislators...much of the previously proposed legislation regarding tax on oil and gas reserves would have strangled any corporation...especially any of the new native corporations..that there that were fortunate enough to have potential resource on their lands.

Mr. Commissioner, the Arctic Slope Regional Corporation endorses and supports the proposed Beaufort Sea Nearshore Petroleum Leasing Sale, for several reasons:

1. It will aid the State of Alaska in solving its current financial difficulties.
2. We believe that the State of Alaska...working in conjunction with the technology and science presently available...will not only protect but will possible enhance the environment of the proposed lease area. (for instance, there may result a connection of islands or some other development that would create an even better esturarian fish life. Those respon-



sible...including ourselves... must use the best minds and technical applications in order to accomplish such positive results instead of the all too familiar and tragic destruction that has resulted in too many other resource development projects...in Alaska and around the world).

3. We believe that it is apparent and obvious good sense to use the intelligence, skills and talents of the local Native peoples who have spent centuries learning to live with and on this Arctic land. We take the position that the proper and fair utilization of industrial aspects of this development... as well as the environmental and biological.

Mr. Commissioner, we make this entire statement and especially the last comment...despite and in direct reponse to the position taken by some the representatives of the State of Alaska... including yourself...recently in Washington D. C...where your own testimony would have denied the Inupiat people their personal right to defend themselves against trespass by external third parties. We do believe that was an error in interpreting a very fundamental constitutional right and we believe that from the correction of errors we can all learn.

Thank you for hearing us today...I'm available for questioning.

Commissioner Martin: Thank you very much. I appreciate your statement. I'm thinking ahead to our method for decision making

on this proposed sale and selecting the area. Much of it is a matter of attempting to look at the testimony and information we have to decide the appropriate areas to sell at the appropriate dates and to know when our work is sufficient to proceed.

I'm wondering if you have any comments on a structure that we might use which would assist either the Arctic Slope region or the Arctic Slope Borough to have an impact on the further decision-making process, particularly in the technical or environmental sense. You expressed a concern about the Colville River area and you expressed other concerns, and although at a certain point we do have to move forward to make decisions, I'd very much like to know your thoughts for any further input or any ideas you would have for assisting us in that process.

Joseph Upicksoun: Mr. Chairman, as I indicated to you earlier, the people that would be effected would be those that are in Nuiqsut and the Colville River, the Colville River Delta. The village corporation president will be speaking on that issue.

For the record it should be indicated that the Arctic Slope Regional Corporation is organized under the Alaska state law, Alaska state corporate laws business for profit. This includes our village corporations. They are also under the Alaska state law as far as the corporate structure is concerned.

Now the best I can do for you is speak on the profit motive side and speaking as a landlord but I cannot speak for the North Slope Borough government because it is regulatory and has its powers which the profit motive corporations do not have.

Commissioner Martin: I appreciate that. I assume that sometime, as I said before you came, the time frame for a sale if any lease sale could be as early as this fall, late this fall probably, or anytime into the next year; and prior to that time. I anticipate that we will be developing various aspects of that sale, conditions on that sale, and I will give you my personal assurance that the maximum...possible we'll attempt to consult with you and involve people in both the regional corporation and the governmental unit as much as possible.

Joseph Upicksoun: Mr. Chairman, we have our technical staff, our consultants that watch all the activities that are occurring within the Arctic Slope region, the North Slope Borough, Alaska State, and the federal government; so we're covering all bases so that we don't get caught short.

Commissioner Martin: We will do what we can to keep the communications flowing. I now appreciate for the first time, Joe, how far you had to come to Washington for the Land Claims because .....never get here. Lt. Governor?

Lt. Governor Thomas: Well just one question comes to mind. I understand that the barrier islands are a rather important denning site for polar bear. Do you think oil development on those barrier islands can be compatable to such things as denning bears, or what?

Joseph Upicksoun: The University of Alaska Sea Grant and Dave Hickok has advised us that we should take a position where we can cooperate with the development of the oil and gas lease

sales in the Beaufort Sea area. So in answer to your question, Lt. Governor, it would be safe for me to say that if Dave Hickok saw any reason where there would be any disturbance of any wildlife within that area, he would have told us so.

Commissioner Martin: Larry?

Larry Eppenbach: Mr. Upicksoun, I have just one question. You mentioned in your testimony that the budget restraint option has been relatively under utilized by the state government up until now. Earlier testimony you indicated that when budget restraint is applied typically to bush or regional interests at first suffer in terms of the impairment of the services provided; I wonder if you would care to comment on that?

Joseph Upicksoun: Perhaps the best way that I can comment on that is by referring to Jacob Adams and Oliver Lavitts statement before the House and Senate in the Alaska State Legislature in opposing the oil and gas inplace taxation. They offered other ways of doing this. Apparently the Alaska State Legislature in its wisdom thought to go ahead and pursue taxing oil and gas inplace and proven reserves.

Larry Eppenbach: Thank you. That answeres my question, I appreciate that.

Commissioner Martin: Easy, do you have a question?

Easy Gilbreth: No, sir.

Commission Martin: Thank you very much. Would you like to introduce your colleague from Nuiqsut.

Joseph Upicksoun: Thomas Napageak, President of Kuukpik

Corporation.

Commissioner Martin: Would you like to come forward? Very glad to have you here and we look forward to your statement.

Thomas Napageak: Mr. Chairman,

Commissioner Martin: Yes?

Thomas Napageak: Lt. Governor, Gentlemen.

Commission Martin: Will you identify yourself for our tape recorder there and proceed?

Thomas Napageak: I'm sorry to tell you that I don't have a prepared statement for the whole area of Beaufort Sea but I do have testimony concerning one exploratory well that the oil companies plan to drill this summer.

Easy Gilbreth: Could you give us your name please?

Thomas Napageak: My name is Thomas Napageak, I serve as President of the Village Council, I also hold the same title with the Village Corporation.

I would like to start out by telling you that there's no interest in industry in the village of Nuiqsut and the village is mainly a subsistence village with hunting and fishing activities as the main employment of the villagers which gets pretty tough at times.

I received a letter concerning the exploratory well that one of the oil companies plan to drill this summer and I have brought this to the attention of the Village Council and these are the comments that they had:

1. the site being too close to the migrating white

fish. I do believe you have the location of the exploratory well that they plan to drill..... State of Alaska.....; which is the main channel of the Colville River;

2. Drilling operations starts the same month the small white fish starts coming in, which is September and October and that the sound of operations might distrub the migrating fish and greatly affect the livelihood of the village people of Nuiqsut.

We have understood, according to the letter, there were three barges that were to be towed and sunk during the ice-free season which would be in the month of July and August, there were no objections to this. If the drilling operations should start on the first of the year, like January, that's after the white fish, small white fish aren't migrating.

This I hope will help in what the state desires.

Commissioner Martin: Thank you very much. I wonder if it would be helpful, Easy, if you could indicate maybe just for the benefit of some of the other people as to what the status of that well is, to identify it a little bit better. I don't know myself.

Easy Gilbreth: Are you talking about a well, an application that Union Oil Company filed.

Thomas Napageak: Yes, sir.

Easy Gilbreth: There has not been a drilling permit approved for that well. It's my understanding that Union is pursuing a different course of action and has dropped that plan to bring the

barges in. I've been asked to hold up any further consideration on the permit until they revise their plans and I don't know what their plans are at this stage; but I think you can rest assured that that permit will not be processed for any drilling this year. Does that help you?

Commissioner Martin: Could I ask, if I would, if both on your own behalf and perhaps with the Regional Corporation if submit something in writing in a little greater detail on the question you raised today with the regard to white fish migration and any other thing that concerns you. It would be of tremendous assistance to us to have that, and my recollection was very much the same as Easy's that that permit is probably not as eminent as you think; but if we could get something in writing, I assure you that it would be of.....

Thomas Napageak: Yes, sir, I have written a letter to Walter B. Landers. I don't know whether he's, I think he's with the Corps of Engineers or something. But.....

Commissioner Martin: The letter, if you'll submit it to either me personally or to Mr. Gilbreth as Director of the Division of Oil and Gas would be very pleased to have that.

Lt. Governor Thomas: Mr. Chairman, if I could just ask you or Easy a question. Even if the subject permits were used in this year, would there be any reason why it could not require the commencement of drilling in January instead of October?

Easy Gilbreth: I don't believe that there is any reason. Our main problem is that nobody tells us that you have a fish

problem there, you know.

Commissioner Martin: That's right. Generally speaking if we can learn those things, its possible to be responsive and perhaps.....

Easy Gilbreth: Mr. Chairman, I believe that the oil companies also would certainly agree to change their plans if they are aware that there are conflicts like this. I think it's a matter of communications.

Commissioner Martin: I appreciate your statement very much, thank you. Is that all you have?

Thomas Nagageak: Yes, sir.

Commissioner Martin: Thank you very much. The last witness we have on the list at the present time is Dr. Denner of the Arctic Naval Research Labortory. Are you ready, Warren? Could I ask at this time if there are other people in the room that would like to testify or are prepared to testify or to offer anything in writing so that we, this will be our last witness so far as we know. We have plenty of time and would like to encourage anyone that does have anything to say that to do so.

Someone from the audience: Mr. Chairman, I would like to make a, I don't have a written statement, but I would like to make a few remarks to you later.

Commissioner Martin: We'd appreciate it.

Someone from the audience: .....as board member and advisory member of Environmental.....

Commissioner Martin: Yes sir, we appreciate that and you



can follow Dr. Denner. Thank you and will you identify yourself for the records?

Dr. Denner: Yes. I'm Dr. Warren Denner. I'm the Director of the Naval Arctic Research Laboratory at Pt. Barrow, Alaska.

What I would have to contribute in comment to you proposed lease would apply only to the scientific requirements related to those leases and to the development because that is my business.

I've held the position as Director of the Naval Arctic Research Laboratory since January 1974. Prior to that time I was professor of oceanography in Monterey, California. My background is in oceanography, I hold a PhD degree in physical-oceanography from Oregon State University. I have approximately 14 years experience in the field of ocean related science.

As the Director of the Naval Arctic Research Laboratory, I am responsible for programming and coordinating the support requirements of scientific programs that are authorized for support through the laboratory by the Office of Naval Research in Arlington, Virginia.

The laboratory has a long history and has made it possible .....that there are other interests involved in the development of the resources of Arctic Alaska besides those of the financial interest of the State of Alaska. If we miss that, than these may, these resouces may be developed irregardless of how the State feels in the waters adjacent to the state land.

I think that the world today is almost completely dominated by resources and their distribution over the planet. We're making

tremendous efforts to develop resources in areas which are difficult to work in and have long access routes in order to move the resources from that area. Certainly the Arctic Slope and the developments of Prudhoe Bay fall into this category.

These resource distributions dominate not only our economics but our international politics. Once we develop those resources then the matter of protecting those resources and the supply chain of those resources brings in the military aspect of the resource development. I think that it would be unfortunate if we overlooked the very, these very important aspects of any resource development.

The development of any resource requires at least two pieces of understanding; the technical know how to actually extract the resource and process it into useful commodities, and the scientific understanding necessary to minimize the impact of the development of that resource on the environment. In the Arctic regions of the world, or the Polar regions of the world, our understanding of the environment is to say the least, incomplete. You just had an example of that in terms of the fish migration up the Colville River which had not previously been taken into consideration in the application for permit to drill there. It is in part a problem of information transfer but it is also in part a problem of advancing our technical and scientific knowledge. That's the business that the Naval Arctic Research Laboratory is in, and has been in for some time.

Both the advance of technical and scientific knowledge

requires some time, there is a time factor. In any scientific project there is no assurance at the onset of success. Frequently the wrong initial paths are chosen and the scientist in his efforts is frustrated in trying to answer the question he is out to answer.

To a very large degree in the Arctic regions with the scientific community largely coming from other areas, the first experience of the scientist is a learning experience. In addition to that the cost of doing science in the Arctic is very high. The logistic support for science programs on the Arctic ice-pack is expensive. The equipment that the scientist has to work with in order to advance his knowledge was largely designed to operate in warmer climates and often does not function as it is supposed to function in the Arctic environment. These are factors that as a scientific community we have to live with in trying to answer the environmental questions that the proposed development will have to have or it will pose they increase the time factor involved in answering these questions.

One fact that I think is certain and that is any resource development will have an environmental impact. In fact all of man's activities in one way or another alter the natural environment. The alteration may be a good alteration for the good of mankind and his future; and indeed good in terms of the local environment. It may protect it, for example, from continual erosion which is taken place for a long period of time. On the other hand the alteration may be bad. The alteration related to the

development may be a permanent one which is irreversible or it may be a temporary one. In order to guess or to predict, depending on the state of our knowledge, what impact will be of a given alteration, we need to understand the physical and biological systems of that environment.

Our present knowledge of the ocean and its physical and biological systems is incomplete on a world-wide basis. This is particularly true in the colder regions of the ocean, such as the Arctic that is under discussion in this meeting.

Oceanographers and marine scientists throughout their history have largely been warm blooded creatures interested in the more temperate regions of the ocean. If you'll look at a plot of the distribution of oceanographic stations over the surface of the ocean you will find that the majority of the stations will be equator in the more temperate regions of the ocean where it is easier for the oceanographer to work and as you move polar from the equator the number of stations and the separation of the stations the number decreases and the separation increases.

We have very little quantitative knowledge about the physical and biological systems that operate in the Arctic basin. For example, we know off Point Barrow there's a northeasterly flowing current but we know very little about its extent and the horizontal or in the vertical the actual velocities of the flow; the effect of wind and ice condition on that current.

Based on what I know about the coastal flows off Barrow, we

could not predict the dilution and dispersal rate of a pollutant added in those flows.

The ice conditions along the Alaskan Arctic coast vary from year to year. You could call this a cyclic variation if you understood the periodicity of the cycles, you might predict effectively what the ice conditions are going to be next year. At the present time I don't think that knowledge is available to us.

As I pointed out, not very much is known about the ability of the Arctic coastal waters to absorb or dilute pollutants that might be injected into the environment by any development. It would certainly depend on the nature of the currents and the water masses along the Arctic coastline and the nature of the pollutant that is added. Some pollutants as you know are biodegradeable others have a very long lifetime in the marine environment. It would certainly depend on the ice conditions that we were faced with and as I pointed out previously, at the present time I would say these are unpredictable.

We have no network of reporting meteorological stations off of the Arctic coastline that would allow us to provide the basic meteorological information that is necessary for any predictive scheme. Even to predict the local weather at a given point on the land.

It is essential in my mind that we look at the environment as a system and a coupled system. The alteration of one part or one aspect of the system will lead to an adjustment in some other part and possibly an adjustment in the entire system. This may

spell diaster for one element or more in the system, potentially for the whole system. If we had a better understanding of the physical and biological systems of the Arctic environment than we could with more confidence alter one element of the system and expect to predict how the other elements of the system would respond.

When we look at the overall value of petroleum resources in the Arctic not only from the point of view of the finances of the State but in the national interest, the amount of money that we've put into scientific research in the Arctic is literally a drop in the bucket.

At the present time, the national program in scientific research spends approximately three times more in the Antarctica than it spends in the Arctic.

It's apparent that the development of oil in the Arctic shelf region will involve several interactive interests. The State of Alaska, the federal system, the Native peoples of the Arctic and the oil producers who will ultimately do the exploration and production. At the present time we see in our area an interaction between the oil development on shore, both within the Naval Petroleum Reserve and on other state and federal lands, and on lands held by the State, Federal Government, and native peoples. The develop of oil in the State offshore area between the water line and three miles, and the development slated for the federal offshore lands between three miles and 12 miles, are certainly going to be interactive. If you have an oil spill in one of these areas

it very likely could impact the other area. If you extract oil from one of the areas you very likely will impact the oil-reserve in the other area.

It is impossible in my mind to develop the oil reserves in either the coastal environment onshore, the State lands offshore, or the federal lands offshore then independently and it must be a coordinated effort. Many of the scientific questions that must be answered are common to all of these areas. The environment does not recognize the arbitrary boundaries of the land holdings.

The Arctic coastal environment consists of a shoreline; during the ice season a region of shorefast ice along shore, out to maybe 60 or 70 feet of water depth; a zone of shear between that shorefast ice region and the offshore polar pack; and the polar pack. The physical and biological understanding of the interactions of these natural zones is not well understood. The physical system consist of currents, water masses, winds, ice conditions, distribution of temperature and salinity, the ability of water to absorb and dilute pollutants. In shallow water, our ability as a scientific community to predict these important physical factors is very limited.

The biological system living in balance with the physical system consist of several different levels of organisms plankton, fish, marine mammals, birds and man. If you alter the physical environment you will alter the biological system.

A great deal of scientific and technical information is necessary in order to develop the resource in this Arctic zone

the Naval Arctic Research Laboratory has provided a base of operation for arctic research for over 25 years. It continues to support the scientific and technical programs that will allow the development of the arctic regions. However, the Naval Arctic Research Laboratory has a responsibility for providing the knowledge of the environment that will be necessary to protect these resources in the national interest once they are developed.

Obviously the Navy has a selfish interest in the establishment and operation of a laboratory within the arctic region.

The Arctic Ocean is a real ocean basin with depths of 3,000 to 4,000 meters and military operations are conducted within that basin. Some of the technical questions that we work on at the Naval Arctic Research Laboratory of necessity must also attempt to answer the questions that national defense poses for the Nation. Because of the funding source the laboratory must give emphasis to the resolution of these questions.

All of our efforts require money, facilities and logistics capacity. The requirements to study the Arctic coastal zone as far as facilities and logistic support are much the same as the requirements to study the Arctic offshore areas in the deep ocean. As we, are in our scientific efforts for the Navy with the development of these resources we're playing a game of scientific and technical catch-up.

You are committed to the development of the resources offshore in Alaska in certain areas at the present time. The development is going ahead with a very limited environmental base of



understanding.

In the area of scientific support, we're also playing a game of catch-up. The Naval Arctic Research Laboratory which will provide the base for the environmental assessments that you're going to make in part has received level funding support for the last three years. Our costs have escalated and I think that the conclusions are obvious. The scientific effort in the Arctic will have to be curtailed unless additional funds are made available on a national level to support research. During this period of time the capacity of the laboratory has gradually decreased until at present time when we are at a point when we may not be able to meet our existing commitments. In that regard then we have a very large program in the early stages called 'the Outer Continental Shelf' program related to the lease of the federal offshore lands. At the present time we are not confident that we will have the facilities to support that program eventhough, it has a tremendous importance to the national security and national energy problem.

We expect to have a very active scientific program at the laboratory over the next few years; stimulated by the need to develop these resources but possibly limited by the fact that we have indeed stretched our facilities and our support capability to the limit.

I might point out a few of the larger programs that are on going or in the very advanced planning stages that will provide scientific information that will be of import to the explor-

atory development of the Arctic coastline. The largest program at the present time is a so called 'Ajax Program, the Arctic Ice Dynamics Joint Experiment' which is an international program hoping to answer the questions related to the growth and movement of the ice field in offshore regions. This project will last over a period of 14 months though it has been on going for several years in various pilot programs. We have established four ice stations, 400 miles to the northeast of Barrow and we expect to maintain these for 14 months from their establishment in March of this year. Another important program being initiated right now that will relate to the development of the Arctic coastal lands is the so called 'Rate Program, Research into Arctic Tundra Ecosystems'. The information from the rate program will be essential to predict the impact of mans activities on the biological systems of the tundra.

The Outer Continental Shelf program which I mentioned previously is a BLM Noah program to provide the baseline measurements that will be necessary in the preparation for leasing of the federal lands for oil exploration according to the Outer Continental Shelf Lands Act of 1972. Research will be conducted into most phases of the physical/biological systems in the Outer Continental Shelf area. This will certainly have a direct application to any development in the state lands. Research is directed toward answering the key questions that must be answered before exploratory development can take place. Any questions of science in these areas will have to be addressed,

many questions will be left unanswered.

The Arctic Offshore program presently under discussion in the National Science Foundation and the Army Corps of Engineers is an attempt to augment our scientific understanding of the coastal environment between Barrow and the Canadian border. This program probably will go ahead in the next year or so. Parts of it are being incorporated with the Outer Continental Shelf program. In addition to that we have several smaller scientific program efforts that are taking place out of the laboratory. Last year we did about 9,000 man-days of science at the laboratory; this year will support over 30,000 man-days of science.

In closing, about all I can add is that the scientific understanding of the arctic environment at the present time is very limited. The cost of gaining this understanding at the present time is small compared to the ultimate cost benefited the development of the resources to the State in the Nation. The long terms of the effect of this development on the environment are not easy to understand nor predict based on the present base of scientific information. Scientists are currently arguing as to whether the ice sheet in the arctic basin may be decreasing in thickness and at what rate.

Commissioner Martin: Again, thank you very much. I have just three or four brief questions. I know you're aware of the relationship of, aware of the status of the present Outer Continental Shelf region over there and this area and aware of what your future role appears to be in that program. I would offer you

the conclusion that the state program is somewhere near the status of the federal program is; that is our level of knowledge is somewhere in the vicinity of the level of knowledge that the Federal Government must have looking towards leasing decisions. I wonder if you might reflect a few moments on how you see the relationship between that federal program and our state decision to lease in the terms of the scientific knowledge that's required and if you would, I'd appreciate it if you would comment on the differences between the area inside the Beaufort Islands and the area outside the islands?

Dr. Denner: It would seem to me absolutely essential that the development of both areas take place in unison and that the scientific base of knowledge that is required in both areas is similar. Whether the scientific program that we call the 'Outer Continental Shelf Program' will be adequate to provide an environmental information base that will safely allow the development of the Outer Continental Shelf lands; is a question that I can't answer at this time because of the uncertainty of achieving the scientific understanding and the time frame within the dollars that are allowed.

There are no routine surveys, scientific surveys, of the Arctic coastal environment as there are in other coastal areas. For example, along the coast of California or the coast of Oregon. These programs that are just now really leading to an understanding of the processes that take place on the shelf regions in Oregon and California; took tens of years of monthly or seasonal sampling

of the environment. You are dealing with a very dynamic environment that changes continuously and you must sample that environment and its properties over a long enough period of time in order to understand the cycles that take place. A year or two of scientific effort, especially frustrated scientific effort which this is I'm sure going to be in the beginning, may not be adequate.

Commissioner Martin: Could you elaborate on that in terms to what you think might be necessary to close the gap? So that you won't be

Dr. Denner: Well with respect to the Outer Continental Shelf program as I understand it at the present time, their planning three lines of oceanographic stations in the Beaufort Sea area. One off Point, one off Prudhoe and one off some point inbetween. These lines of stations will be occupied on three occasions throughout the year. Probably the first part of the winter season, after the winter and then sometime during the summer. We're very restrictive in our operations during the winter months; during the dark season. We do not have the ability to conveniently work on the polar pack and move or on the ice and move during the winter time. So this may be a gap in our environmental knowledge. Certainly the ice sheet continues to grow through out the winter. The salts that are in the ice sheet are rejected, come in to the water column, cause convection of the water column, probably establish some kind of currents which exist or persist through that time. I think we are probably going to have to wait through the first year of effort on these lines of

stations to find out what the variability was during that period of time to say whether we have any confidence on extrapolating that information and making environmental predictions from it.

Commissioner Martin: I don't, in answer to this next question I truly do not want to be playing semantic games but I'm curious to know in your scientific judgement, if the level of our present knowledge leads you to the conclusion that leasing in these areas and I assume that you do continue to treat them very similarly in spite of some distinction and to recognize it; that leasing in this area because of the absence of our knowledge is unsafe or does the lack of knowledge in the area lead you to believe that we don't know whether it's safe or not, one should then wait.

Dr. Denner: I think it very much depends on the type of activity that you're planning and the way in which you perform that activity, how much caution goes into the exploratory work that's going to be done. The ocean can't tolerate a certain level of pollution without, so far as we know, permanently damaging the environment in an unacceptable way. So it is going to depend on the scope of the operation that you are considering and how carefully that operation is carried out. Many of the mishaps that have taken place in the past could have been avoided by simple engineering considerations at the time in which the wells were drilled, for example. I think it's essential that you carefully monitor any activities that are going to take place to see that whatever lessons we've learned in the past, that exist

in regulations are met. Now you asked me to comment on the difference between the waters within the barrier islands and outside the barrier islands. Obviously the presence of land areas and ice zones, changes the nature of the ice field in those areas. It traps the ice; tends to grow more uniformly; it tends to be more stable, more safe to operate from. The conditions will however, vary from year to year and I think that by monitoring the right environmental parameters, that is the air temperature and the wind speed and the water flow; we can.....

Commissioner Martin: .....aside from barrier island, in fact there are operations underway; operations proposed on those areas and I think that the conclusion for some of those remarks might be that we in a certain sense, already committed ourselves to that course. I'm curious to know; No. 1 - if the Research Lab is interested or has done any work with respect to the existing operations out there for any reason, or intends to No. 2 - if you see anything irretrievable in these areas around these leases?

Dr. Denner: The laboratory has participated in several programs which I assume have provided a data base, allowing some of those operations to go on. Work in permafrost, gravel distribution, depth contours, ice conditions, ice movement, and so forth. I'm not saying we don't have any knowledge, but our base is very limited. The activities that are taking place now are again limited. It may be perfectly alright to continue those activities in a mistake to expand them in.

Certainly the Canadians are carrying out a development in their own arctic regions and some of those could indeed impact the living resources of the Alaskan arctic. I think again it is important when anybody engage in a potentially hazardous activity and the environment that they monitor the environment before, during and after that activity to see that all of the potential hazards are covered. I know that at the present time the Canadians are drilling in their archipelago region and at the drill sites they are monitoring the currents underneath the ice sheet to speculate on what may happen if there is a blowout at any of their well sites. I think this important information and we should assure that it is available.

Commissioner Martin: Thank you very much, you really covered it. Thank you.

Larry Eppenbach: Indeed you did.

Commissioner Martin: Sir, I'm glad you're here.

Thomas Brower: Mr. Chairman, Lt. Governor; I'm Thomas Brower of the Cape Smythe Whaling and Trading Company. I was born in Barrow, my father was Charles Dewit Brower and my mother was full Eskimo, for the record.

Commissioner Martin: Thank you, we're glad to have you with us.

Thomas Brower: First, the native of the land, citizen of the North country with very little education except in the school of hard knocks; been interested regarding the Arctic and the culture of the people, my people, the Eskimos; and my main concern



at this hearing is protection of their subsistence living which means fishing, the bird life, the marine mammal, and the fur-bearing animals.

I bring this out because of the fact that we had, a few years ago, a huge tanker (Manhattan) coming around the Northwest Passage and my concern at that time was what would happen if one of those big, quite a few million gallon, tankers got crushed in the ice between the northern part of Alaska and Canada where many of our marine mammal and bird life come up to propagate; and I'm touching on this because of the fact that in 1944 or 45 when the Navy first came into this area, one of their tankers hit the bottom of the ocean, north of the point here, and they pumped 25,000 gallons of crude oil into the ocean; and as that thing scummed the ocean and started drifting toward these islands that you are talking about; it just hung in wide strips, some 40 to 50 feet wide along the edges of those islands. And all the ducks that came near it and the fur-bearing animals or the mammals (like the seal) went through it were soon blinded and thousands of them perished and I just don't know what happen to the fish that passed through those areas, but I'm pretty sure many of them died too. So, as I say, I'm touching on the protection of their subsistent living which has to be protected and I bring this out because as Cape Smythe Whaling and Trading we operated from Pt. Lay all the way up into the Canadian border (the demarcation point). We had change stations all along the Arctic. During the whaling years most of the people were in Barrow, Pt. Hope or Wainwright. Very

few along the coast, here and there. But when the baleen, which was their main target, dropped due to other materials coming into its place then they turned to fur; and the families and related people moved all along this arctic coast; all the way from say, from Pt. Lay up into the Canadian border. And would be nearly every point 10, 20, 30 miles apart you could see people living off of the land. In the area where this offshore drilling is being asked for, near the inside of these islands is teeming with fish in the summer months and millions of salmon, trout and white fish are passing in just, for months there and coming into the Colville and all in through the inside of that area of those islands; and when we have certain seasons, it's kind of hard to predict, we may have ice on the east shore and if the shoreline is just cluttered with huge ice floes, whales can't go through that; and they have to come closer in. After rearing their young ones out in the islands north of Canada, Banks Island and so forth, in between those other islands; they hit and touch just a little east of Herschel Island and I, next to the shore and they start turning west in their migrant pattern; and they're in that shallow water with their young ones, and there are big pods of them, maybe 50 to a couple of hundred in each pod, and moving along. And as they move, they will reach these obstructions where they can't go through so they use these channels, these deep channels, inside islands that come out on the west side of those islands moving westward. And these are their routes, their pattern of movement, and their migratory movement. In the spring

months they hit and touch here but always swing out to the second league which is outside of the shoreline league and follow that league, touching off towards Banks Island in their spring movement; and that is why very few whales are observed on the shoreline during the summer and spring months.

I'm in, as I say, for the protection of these marine and fur-bearing animals for my people the Eskimo, and I touched down on the big tanker and what it could do and I could touch down a little on the pipeline. I've always agreed that the pipeline would be the logical way to export the oil because you could control it, you could see it where your, if it is observed and monitored, it could be observed and taken care of.

Well, I don't have too much to say but I thought I'd give you this to think about because it's the lifeline of the people. If the oil is gone, the people will have to live this land and I hope you keep that in mind.

Commissioner Martin: Mr. Brower, thank you very much, I appreciate your comments.

Is there anyone else who desires to be heard? If not, thank you very much for coming. It's been far more helpful than I had hoped it would be. I'm just very pleased with what we heard and I want to thank you all and as I say, we are dealing now in a arena of a possible proposed sale. There have been no decisions made, no movement toward selecting tracts and these hearings, plus the hearings in Fairbanks and Anchorage, will go along with the impact or the environmental assessment and other work going

on to try to make those decisions; and you've been a great help today and I appreciate it very much.

Lt. Governor Thomas: My thanks to you all too; I've certainly profited greatly from it and I think it's been very useful to me.

Larry Eppenbach: I certainly echo that, I've learned a great deal this morning, thank you.

Commissioner Martin: Thank you very much. The hearings are adjourned.

# **Beaufort Island Area Lease Sale**

***Public Hearings***

**Fairbanks**

**1975**

Hearings of Alaska Department  
of Natural Resources on  
Possible Oil and Gas Lease Sales  
in the Beaufort Island Area

May 28, 1975  
Fairbanks, Alaska

The recorder failed to give intelligible tapes for the remarks  
of:

Commissioner Martin, Lt. Governor Thomas and Larry Eppenbach  
and testimony of:

Frank Murkowski - Alaska National Bank,

Wayne Rodges - A.O.G.A.,

John Carr - Atlantic Richfield Company  
(written testimony of J. Carr was submitted and  
is attached)

Witnesses testifying

Dr. Max Brewer - A.O.G.A.

Celia Hunter - Alaska Conservation Society

Pat Senner - Friends of the Earth

Gil Zemansky - Fairbanks Environmental Center

C. W. Baer - Greater Fairbanks Chamber of Commerce

Richard Furniss - Self

Dr. William Wood - Fairbanks Industrial Development Corporation

## PROCEEDINGS

### Fairbanks

.....

Max Brewer: This morning it seems.....

the ice begins freezing up the first, second week in October. It freezes as a generally very smooth surface with occasional early cracks (tension cracks) and allowing a little bit of overflow. Along towards spring as the temperatures start to warm, there is a development of one or two small ridges; a relief from the compression. The ice that is formed in the lagoons runs between 5 and 7 parts per thousand salinity. The salt is absolved downward as the freezing process occurred and much of this high salinity water is flushed out during the normal winter occurrence. There are pockets however, of high salinity and these may remain.

In the spring, puddling starts the later part of May and the melting will continue then through the month of June; early part of July. It's interesting to notice that as the melting begins in the mote, that you have tremendous micro changes. For instance, you may have ice out a foot or so from shore and yet the water temperature right at the shoreline may be as much as 70°F. This allows micro-climates for various of the invertebrates to develop very rapidly. You find the same thing on shallow shore lakes. So that as we talk in the broad picture we very quickly narrow down because it's such rapid change over a short distance.

The ice dynamics in the lagoon areas is one in which is mentioned before, there's not much pressure. There is little

tendency to override but there is the tremendous difference between the winter and summer seasons. The suggestion of tremendous pressures in these lagoons does come in because you don't have to have much movement to develop pressures, however, experience going back into the late 50's shows that if you're in a bay, protected bay, where you cannot get the pressure from the pack that you can leave vessels; for instance, I believe that since 1957 that the DEW Line has kept four vessels in the wintertime there at Tuk Tuk over in the McKenzie Delta so that they take supplies down the McKenzie than spread them out along the DEW Line giving a faster and more reliable shipping. They've had barges frozen into the bay there at Prudhoe, those that they use for off-loading. These have not suffered great pressure. There are additionally little tricks to the trade. For instance, bubblers and they just have little air bubblers along the side of the vessel and if there is a tendency to come in and exert pressure still this keeping the ice not only separate from the vessel but there is a gradual melting of that ice. So that I think that these things have not been delved into a degree. There was a statement that much work needs to be done in ice dynamics and yet, for sea ice, there are some very extensive studies. Peyton for one has gone into it, a very great depth, the actual strengths of ice, the shearing forces he has worked with them under various temperatures including the salt water eutectic; so that there is information that can be plugged in to handle some of the gaps mentioned.

Another area of discussion was subsea permafrost; the



extent. In 1956 papers were provided on bottom water temperatures and subsea permafrost temperatures in the Barrow area; also work has been done on the lagoons. Now in the Barrow area you have stable lagoons where there has not been much recession of the coastline for several thousands of years. The information available there, shows that the offshore islands, bars if they have tundra cover, will have a permafrost condition similar to that existing on the mainland. If they are and the temperature there is about  $-9$  to  $-10\frac{1}{2}^{\circ}$  Centigrade at a depth of 60 feet where there is not much change during the annual cycle. On offshore bars you have temperatures that run a couple of degrees warmer but still permafrost and then beneath lagoons that are 3 feet, a meter that vicinity; your temperatures more nearly represent those temperatures found beneath tundra covered areas because eventhough you have a lot more potential for heat into the water, into the subsurface and do not have the insulating effect of the tundra, still the ice keeps the water temperature cold and you do not get the warming effect. Now the extention of permafrost offshore in an area like that where as it may be 1300 feet thick at such as Barrow or 2150, 2200 feet such as Prudhoe; still when you go offshore the average annual bottom water temperature controls the permafrost. So that you find that if it is a stable shoreline that the permafrost conditions are well identifiable and you will have a maximum 30 to 50 meters of permafrost in the bottom. This permafrost will continue till you reach a water depth of something on the order of 150 to 300 meters, then the bottom

water temperature is above freezing point in; by the way although permafrost considering the brine conditions it would be existing in the frozen state, then you have a thawed area and in the deep polar basin you again have permafrost at depth; very thin, unfrozen but still by definition below the freezing point of fresh water. In an area such as Prudhoe Bay you still have the same weather conditions existing, generally the same water although there's no influx of either of Bering or Chuckchi but essentially the same conditions with one exception and that is that you have a receding coastline. So that you have not established equilibrium conditions, the temperatures are colder. You have fingos on the out lying area. This information is available, it is hard to dig out and I would like to provide some of the references so that in the final assessment it would be available. I bring it up in this detail however, to point out whereas the assessment felt that there was a big information gap, that the information does exist.

The, one of the things I drilled a hole beneath the ocean to get bottom temperatures in 1953. The temperatures ranged from to a minimum of  $-1.1^{\circ}\text{C}$  and a great deal of data were obtained. However, as a scientist, I had to have a drilling rig to get the information and this is one of the things I think should be understood is that much of the science; you can go so far, but then when you want to get more information you have to have cooperative arrangements with someone that's got the tools to enable you to get to the data. I think that often times this is not well

understood.

The question of winter roads in the area after the first few bobbles, much experience and I would say that the roads on the, within the state lands on the North Slope are probably the best constructed, the best designed roads in the State of Alaska and eventhough some of them up there do not for good scientific reasons have surfacing. There has been some suggestions not only in this statement but in some of the Canadian work and by some of the very deeply concerned people that well winter roads with the idea that then won't have a road and so that there will be a protection of the environment. I would like to throw out the warning that winter roads are very touchy, that as constructed, that unless there are very tight controls, and unless it is light traffic that they may bring on very considerable damage to the tundra; particularly in areas where you have little bit of relief and provide certain amount of erosion.

I think that there should be orderly development. I think that we should look at the problem realistically there and see that when we look at the offshore environment, a big section of it is already under lease. That developments are going on in it and unless there is an inventory of the entire marine area involved so that planning the question of whether or not should you have a coastal road, that question can't be answered until you have an inventory out there. And yet, a coastal road may be built here in connection with gathering lands if there the additional information is not development it may be built

essentially in the wrong place so that there maybe duplication. There's also the question brought up on causeways. That is one possibility for construction offshore. However, to go ahead and try to lay down the exact rules where you will have causeways and one thing and another, before you know if you really want to go there portends very real problems for the environment and that in our efforts to protect we may end up strangulating what we're trying to protect, I would throw that. There are regulations existing that allow this control if people are willing to work together and look at the specific problems involved.

Mr. Chairman, I would like to present written comment in somewhat extended and expanded form and including a rather extensive addition to the bibliography because I believe that we can provide information where some of the gaps have been identified by the authors. I thank you very much.

Commissioner Martin: Thank you, Dr. Brewer, it is very helpful, especially in Barrow. I've one comment and two questions, I'll ask the questions first. You talked early in your testimony about the habitat protection stipulations and the need that you said to have them included at some point with specific reference to the places where they were most important and I'm just interested in knowing if it's your belief that the information presently exists; that those stipulations might be put together on a reasonably expeditious schedule prior to any lease?

Max Brewer: I believe that, Mr. Chairman, a statement of policy and program could be laid out as to what the ground rules

might be. However, I would suggest that the State has a far better mechanism because there is the requirement for permit before drilling; there is the requirement of permits before discharge and you can take these and put the stipulations into the permit to provide you with this very good control for the area and it will fit the area. For instance, I would hate to see someone try to come with a general stipulation that would apply to proposed drilling on Howe Island with the snow geese habitat and say on Pingot Island where no snow geese, no bears either; and to try to get a detailed protective permit that would apply to both, means that you would be either unduly restricted or unduly loose and the State does have in existence the requirement for these permits issued by Natural Resources but approved as to their aspect of it by Environmental Conservation and Fish and Game; so I think that

Commissioner Martin: This all goes to this question of how much we should do before we lease versus how much we can do after and how acceptable that is to industry as far as I'm concerned. Before asking the second question, let me make a comment and this may be in the realm of creating additional consulting assistance for your clients but it seems to me that it would be extremely useful for the Department of Natural Resources and others who are going to be involved in the decision making process, to have your advice on a methodology for moving forward with problems like that in the leasing and permitting process. In other words, take a look at the scientific problems that exist, you mentioned several of them in your testimony today and deal with those in practical

terms of leasing and the activities that follow leasing, the permitting process for exploratory and following oil development activities. The question in my mind is how much needs to be done before we lease, then how we proceed after we lease and I think that if you could sort of tie the scientific and the practical considerations together in any way that you think is appropriate it would be very useful to us. I know you're extremely aware, because of your former position, of the processes that are necessary to accomplish those things and I think your insights would be very valuable to us.

Max Brewer: Thank you.

Commissioner Martin: Consider that a request if you're able and your clients will sponsor that, those comments. I think it would be useful to us.

My last question is, you mentioned and used the words 'occured very often' with respect to the barrier islands and I just wondered if you would comment on this. That some of the operations we are contemplating would occur sort of on the line itself, that is would occur on the barrier islands; would occur either inside or outside but on the islands that serve as the barrier and does that represent difficulties because of what you indicated as you know, greater forces of ice dynamics and the other points you made with regard to the area outside the barrier islands?

Max Brewer: Mr. Chairman, not greatly. When we have the barrier islands and then during much of the winter period land fast or shore fast ice, there is for instance; the tendencies for

certain perhaps override on the islands mentioned there. There are occurrences where to certain degrees this is occurred the best documented are right at Barrow. But these are not very great, however, when the ocean lifts up a six foot slab of ice and slides it up 30 - 40 feet why I mean it's quite impressive, particularly when you see the cracks going here and then down here. It's over, these things occur over very restricted areas. The barrier islands themselves in certain instances would offer good areas from which to operate. There would have to be caretaking.....barrier islands that the gravels were not disturbed because that can set up different patterns on the currents. So that the islands themselves can be a very helpful engineering platform without a great damage to the island. One has to find out if that island happens to be a particularly extensive tern nesting area, such as that in which during a period of the year that you could be quite disturbing. From that you can directionally drill out a mile or so that the barrier islands we just talk about them as sort of defining the protected area inside but without saying that they themselves pose any difficulties in operation. However, one again needs various specific regulations that the portion of those barrier islands are not messed with so that you upset other aspects of

Commissioner Martin: The seaward side.

Max Brewer: the seaward side, and it's from the crest to the water.

Commissioner Martin: I'd like to finalize my comments here. Only one more question here. I'm sure you heard the testimony,

quite interesting testimony, given by Mr. Thomas Brower in Barrow and I briefly indicate that Mr. Brower is the grandson and great-grandson of the well known whaling family in the area; he gave some testimony which was certainly partically and historically based rather than scientifically based with regards to the use of the inner Beaufort Sea area inside the Beaufort Islands by migrating whales and by spawning whales, I guess at one time. I just wondered if you had any comment on any of the testimony that he gave. I think that he was just alerting us to the fact that it was his opinion that they were used and that danger existed with regard to those activities of the whale.

Max Brewer: It's in the, first place, Mr. Chairman, well I will; Mr. Brower is the son of the famous whaler. Is one of several sons.

----- Commissioner Martin: Yes. If you.....Max, so that fifty years below zero.

Max Brewer: The fifty years below zero low was taken from Charlie's notes. It was then had some authorship assistance and after his passage the family thought that well perhaps a few specifics might be eliminated and still have a very good seller. I happen to have a copy of the original and it's in Charlie's handwriting. Tom is sort of sponsored

Commissioner Martin: .....amplifier clarify that.

Max Brewer: I would like to mention one thing; the best naturalists that I have known in the State of Alaska, were born in the North Slope. There's one Pete Sabowik who I consider the



best naturalist in the State of Alaska today. Mr. Brower is essentially of the same type and his comments as to what he has witnessed because he has been over the whole coast is correct. The his statements for instance, the whales in the spring after they pass Barrow going out to the second set of leagues and then continuing on to their fattening area in the area to the west of Banks Island and then as they come back, ice conditions permitting, or sometimes forcing, they can go through some of the deeper passes this is areas; you take the C&GS map, and you can see the ones that they go in. There are not many of the beluga, the white whale, in that section. The beluga are in the Chukchi and then over in the McKenzie area and they come in great pods. The largest pod of beluga in the last 25 years went into the inlet.....and could have killed every whale, but it was on Sunday and particularly in those days it ~~was~~ not allowed to hunt until 12:01 AM on Monday; by which time all the belugas were out and gone. But his comments I would give great weight. My impression was that he was alerting the Committee to what could happen.

Lt. Governor Thomas: I appreciate that. Well next to follow that up a little bit then, those particular channels are identifiable

Max Brewer: Yes, sir.

Lt. Governor Thomas: and it's not including all the barrier islands by any means for all of that water inside the barrier.

Max Brewer: Yes, it's on the depth. The whales tend to be too anxious, this is this either the bowhead California grays or

of water.

Lt. Governor Thomas: Another question came to mind, as you were talking about the habitat for wildlife and whatnot and birds and all. I recollected a year or two ago in the Legislature, you presented some proposals by the Department of Fish and Game for critical habitat areas being put into law up here and as I recollect that was (salmon and trout) for various reasons. I wonder if that, would you recommend that be something to be placed before the next legislature assuming that there is time before this lease sale? You identify these critical habitat areas and to put that within the law?

Max Brewer: I think that we need to have a perhaps multidisciplinary teams, make on the spot surveys so that they can put the results of these multidisciplinary surveys before the Legislature and then instead of it becoming a question of politically making a decision. I think that the probably best overall answer will be quite obvious and that it would be very easy for the Legislature to come up with the decision. I think to put it before the Legislature, before a multidisciplinary research team has investigated would be doing a disservice both to the environment, the birds and animals in the environment and to the legislators.

Commissioner Martin: Thank you very much. Larry?

Larry Eppenbach: I have only one question. Frankly it's somewhat subjective but, I'm just wondering, Dr. Brewer; not only as a scientist but as an ex-State official of the proposed position .....presented about the relative position of a lease sale vis a

vis some of our other financial options in meeting the state's revenues responsibilities here in the next few years?

Max Brewer: I haven't really gotten into the business, Larry, where I am trying to second guess you and your job, but I always felt that you were very well qualified and I didn't want to mess around in that but I will give an indirect answer to your question. Some five or better years ago there was apparently a policy or at least a decision made that in the Beaufort Sea province there, that there would be oil and gas development or at least exploration. For the orderly development of that, I think that the area that is covered here in the assessment is an intricate part of that and from the environmental standpoint and the conservation of resources, petroleum and natural gas that might be there, they should be developed in an orderly fashion as a unit and this is without regard to some of your day to day difficulties in Juneau as far as making sure that the solvency is assured; and from that standpoint I would make the answer.

Larry Eppenbach: Thank you very much, Dr. Brewer, for answering the question in a fatherly way.

Commissioner Martin: Thank you, Max.

Lt. Governor Thomas: That's very encouraging to know that the information is there after all. It's kind of a lot to.....

Commissioner Martin: Why don't we take about a 10 minute break and come back at 11.

Thank you. The next witness is The Alaska Conservation Society and is Celia Hunter going to testify?

Larry Eppenbach: She's just arrived.

Commissioner Martin: Celia, hello. You're next. Thank you for coming.

Celia Hunter: It's a busy time of year I must say for holding hearings.

My name is Celia M. Hunter. I reside on Backwoods Trail, Fairbanks. Today I am reading a statement prepared on behalf of the Alaska Conservation Society, founded in 1960 and now having some 700 members statewide. The Society is the major Alaska-based environmental group operating in the State.

The Society congratulates the State of Alaska administration for taking the initiative in preparing this draft environmental assessment for the proposed Beaufort Sea Sale of oil leases. This is the first time that the State has attempted this kind of preliminary assessment covering the positive and potential negative consequences of a proposed state action of this scope. We feel that the material in this assessment is a very comprehensive survey of all available literature on the subject, and will provide excellent background material and serve as a continuing source of information.

A major innovation of this assessment is that it has been prepared by an agency of the state government not directly involved in promoting the particular project under scrutiny. As a result, it is a much freer document, and far more wide-ranging in its coverage and observations than the usual environmental impact statement, which suffers from the self-imposed inhibitions

of its advocacy position. We feel this is a very good way to go, and that the State is definitely on the right track.

One major deficiency of the report is the lack of adequate field research data, which would establish baseline information, and provide an inventory of the major resources in the way of fish, mammals (both sea and land), and waterfowl found in this area, and also provide a description of the major ecosystems and their functions. Scientific data for this whole Arctic Ocean area is meager, and it is this lack of information as to how the natural systems of this part of the world function that could result in destroying a part or even an entire system through sheer ignorance.

Those preparing this report certainly recognize its inadequacy in this respect, and hopefully field research in ~~many different~~ disciplines will correct some of these deficiencies over the few years.

Which brings us to the real crux of the matter, and it is set out in the report itself (page 397):

"The decision before us is perhaps not whether or not to lease Beaufort nearshore areas, but when to lease them. Provided that information continues to be gathered relative to environmental risks."

The State's premise is that lease sale money is needed for immediate cash benefit to the State - nothing more.

But it should be noted that the State is spending much more today than five years ago primarily because of the present Prudhoe Bay oil industry, secondarily due to increased activity of the

natives. In a boom - bust economy, which has been the Alaskan pattern historically, the only rational course is for each boom to pay totally for its busts. Apparently the State is supplying more services (roads, airfields, communication, schools, policing, etc.) and goods (ie: gravel at 0.14¢ per yard, timber, land, etc.) than the oil industry is paying for.

Should we then add another dimension to the present boom just to tide us over the brief interval (estimated at 3 to 5 years) before Prudhoe Bay oil royalties will be realized? To raise the needed interim revenue, we might suggest the State consider some of the following ideas:

- A. Property taxes on industry, particularly the oil industry.
- B. Increased sale prices of such items as state-owned gravel (ie: up the ante from 14¢ to \$1.40 or more if necessary)
- C. Increased transportation fees on pipeline trucking, airport landings, etc.
- D. Partial severance tax before pumping.

If done properly, the above measures and others would be presented openly and frankly as necessary interim revenue-raising attempts. We can't begin to discuss alternative revenue sources, but we are merely suggesting that the State has within its power a good many other ways of increasing income apart from the proposed Beaufort Sea lease sale.

We question some of the assumptions used in preparing this assessment. For instance, the assumption that no new oil pipeline will be built is probably incorrect. The MacKenzie Valley oil

pipeline has been proposed, with a 42 inch line coming from Alaska north of the Brooks Range. It is extremely doubtful that the oil industry will be willing to utilize only one pipeline over the next 50 years. They want to maximize profits by maximizing production. Therefore, the time frame as conceived by this report may be grossly over-estimated, just as environmental and social consequences may be equally under-estimated.

We also feel that the assessment of environmental damage resulting from an Arctic Ocean oil spill is weak. We have almost no knowledge of either the extent of such damage or the probable time span over which it would impact the region. Our knowledge of such things as the effects of hydrocarbons on the algae found beneath the ice pack is very meagre (algae is one of the basic ingredients of the food chain).

We note that in estimating the returns to the State from the lease sale that no costs have been deducted. This matter of cost of producing oil is one we feel merits extensive investigation and analysis. We would hope that a cost/benefit ratio could be worked out which would take into account factors not now being considered, such as the 'net energy return' approach currently being suggested by Howard Odum.. Perhaps this approach would be a major factor in a decision to postpone development of this and other Arctic oil provinces because such development is so costly in energy that we can't presently afford it.

Another reservation we have involves the State's position vis a vis offshore oil leasing by the Federal Government. Won't this

position be weakened if the State itself goes ahead with its own offshore lease (even granted it is a nearshore situation)? And does the State feel comfortable about going ahead with this lease sale in the absence of any coastal zone management plan?

While these brief comments cannot begin to analyze in any detail the potential problems created by the proposed oil development, we would like to mention in passing a concern about the effects of either destroying or expanding the system of barrier islands now existing offshore in the Beaufort Sea. We understand that the present Prudhoe Bay oil development is mining gravel from the barrier islands to build work pads, roads, etc. at Prudhoe Bay. On the other hand, the Beaufort Sea proposal envisages utilizing these same islands as drill pads for the oil rigs operating offshore. This seems to pose some sort of contradiction. Both of these activities need to be carefully evaluated for their ultimate effect on the entire coastal land, water and ice interaction.

We do feel that any oil production from the Beaufort Sea should be planned to follow production from Prudhoe Bay, rather than to occur concurrently. The thinking here is that it is in the State's best interest to prolong the period of oil extraction, rather than to maximize it in a short span of time. Oil can only become more valuable as time goes on, hence the worth of our state oil reserves is continually increasing.

As conservationists and as concerned Alaskans, we would like to see greater emphasis placed on the conservation and wise use of our energy resources, rather than the present all-out



drive to maximize production at all costs. We see the Beaufort Sea nearshore oil lease sales as contributing to the maximizing of production.

We hope that the State of Alaska will come to grips with some of the basic philosophic questions involved in this whole matter of oil exploration and production, in addition to carrying on from the excellent beginning represented by this Draft Environmental Assessment for the Proposed Beaufort Sea Nearshore Petroleum Leasing.

Thank you.

Commissioner Martin: Celia, thank you very much. I appreciate your statement. You raise a number of points that have come up throughout the hearings. There seems to be an emerging difference of opinion as to the availability of data on the area. We heard in Barrow, I should tell you, from Dr. Denner of the Naval Research Lab and he felt there was a derth of information in this area sufficient to justify leasing and operations and he indicated that he also mentioned the Outer Continental Shelf, during, Dr. Brewer's testified this morning that he felt that there was an extensive amount of information available that simply hadn't been recovered and I'm not sure you can add to what you said but I have a feeling that resolution of that would be quite important in considering this issue. So, that is a comment I would like to offer and if you have any further thoughts on that; you'd like to offer at this time in writing anyway I'd appreciate knowing it. But I have a feeling we're going to have to learn it sometime possibly

possibly through a literature search just exactly what is presently available versus what has to be done.

Celia Hunter: I think that's very true and I hope that, well there's numerous, there is a question, I think as to the availability. I think alot of research may still, I think what we need is to coordinate what we know as much as anything because I know that Dave Hickok has pointed out that alot of this ~~material~~ is just presently unavailable and it's, it may be, it may exist in manuscripts, it may exist in many forms. But the fact that it's not available for you know; to apply directly to this kind of a project, seems to me to be the problem.

Commissioner Martin: You may be interested to know that those hearings conducted in Barrow, Joe Upicksoun of the Arctic Slope Regional Corporation testified that in response to a question related to their position which was in favor of a Beaufort Sea sale conditionally in-favor, but generally in favor of a Beaufort Sea sale; that they were advised to take that position by Dave Hickok and I assume that we may be hearing from him in Anchorage, I'll look forward to that. In any case I want to thank you very much for coming by. Lowell?

Lt. Governor Thomas: I don't have any questions, thanks alot Celia, appreciate that.

Larry Eppenbach: I don't have any questions or comments but I would very much like to have in writing her comments today simply .....balance in looking at some of the revenue options the State has within the Department of Revenue.

Celia Hunter: You will have a copy, I didn't have a good  
.....copy ready.

Larry Eppenbach: .....

Celia Hunter: Fine.

Commissioner Martin: I want to mention that to other people as well. We'd appreciate that wherever possible if we could have your comments in writing at some early time so that it will help us in preparing the record. I also, I wonder if I could ask at this time, I have on the remaining witness list The Friends of the Earth represented by Miss Pat Senner, Fairbanks Environmental Center Gil Zemansky, and Mr. Baer from the Chamber of Commerce is here. Are there others here that wish to testify today or to offer comments?

Alright, what we're trying to plan, what we'll attempt to do at that point is wrap up the hearings shortly after noon as we can. So with that I wonder if Miss Senner from The Friends of the Earth will come forward. Yes?

Someone from the Audience: I would like to say that I will testify this afternoon.

Commissioner Martin: Alright, fine. Do you want us to recess and then come back in the afternoon or

Same person from Audience: Are you going to be meeting this afternoon?

Commissioner Martin: We don't plan to meet unless there's reason to do so if we can wrap up the hearings we'd prefer to do that.

Same person from Audience: Okay, I'll testify.

Commissioner Martin: Okay. Pat, thank you for coming.

Pat Senner: My name is pat Senner. I am testifying for the Friends of the Earth's Alaska office located in Fairbanks. Friends of the Earth is an international organization dedicated to the preservation, restoration, and rational use of the earth. We have a long standing interest in oil development in Alaska and consider the proposed Beaufort Sea nearshore petroleum leasing to be a most important issue, not only to Alaskans but to anyone who is interested in the protection of our environment. The Beaufort Sea proposal is of special interest since it would carry the development at Prudhoe Bay further north and extend it eastward to the Arctic National Wildlife Range and westward to the Colville River adjoining Naval Petroleum Reserve Number Four. This area supports an extremely sensitive and valuable exosystem that is particularly susceptible to disruption and about which little is known. Prior to the discovery of oil it was perhaps the last true wilderness area in the United States.

The Draft Environmental Assessment (DEA) attempts to catalog the elements of the Beaufort Sea ecosystem and predict the impact of development. The effort serves to emphasize how little is really known and the long list of highly probable adverse impacts without significant mitigating measures available is staggering. The sensitivity of this ecosystem is a function of the stress due to the cold climate which has resulted in a relatively low species diversity and shortened food chains. These are conditions of

inherent instability which can easily be disrupted by poorly planned development. For example, the barrier islands which are not really discussed in great detail in the DEA are a key part of this system. They serve as marine bird nesting areas and are critical polar bear denning grounds. Their function in the near-shore sediment transfer pattern is not fully understood but is undoubtedly important. Modification of these islands or elimination via mining for gravel could have a critical adverse impact that can only be guessed at. We consider it most important that these islands be left in their natural state.

The manifold problems of gravel extraction are touched on to some degree in the DEA. Whereas every method would have undesirable adverse environmental impacts we suggest that the most promising method at this time would be dredging from the seafloor near the site of the man-made island as has been done in Canada. Of course, any such operations would have to be carefully considered with regard to the total nearshore current pattern, sediment transport, and ice movement. All of these factors involve important unknowns which require answers.

The proposed development of this area cannot be considered as a separate entity. There are those who are pressing for immediate development of Naval Petroleum Reserve Number Four, the Beaufort Sea outer continental shelf, and even the Arctic National Wildlife Range. While it is hoped that government will exercise the wisdom to control development and limit it to certain specific and restricted areas, it should be recognized that national

requirement for oil will likely be considered an overriding factor and that additional development is probable. In that case, it would be in the best interest of the Nation and the environment if it was to be carefully planned out and preceded by a thorough research program. Development in one area is likely to displace animals outward towards adjacent areas. To minimize damage to displaced animals it is important that development be staggered in such a way that these animals have a place to go to.

The DEA economic analysis is questionable in many areas. As was pointed out at the Department of the Interior hearings on Outer Continental Shelf (OCS) oil and gas development in February, since there is so much acreage being offered for lease in the next five years it is doubtful whether there will be enough capital available to ensure that a good price will be achieved for each lease. The area under consideration here shows good potential for oil and gas, but so do a good share of the Federal Government proposed leases, including one and one-half million acres in the Gulf of Alaska. Many of these areas will require a lot less capital to develop and ship to market than the Beaufort Sea reserves. A federal lease off the coast of Texas earlier this year produced some of the lowest bids in history, many of which had to be rejected. From all of these indicators it would seem logical to assume that the State will not receive as much as it would like from a sale in the Beaufort Sea, and should keep this fact in mind when it makes a decision whether or not to go ahead with the lease sale.

The Federal Government usually assumes that in order to lease 200,000 acres they have to offer twice as much for sale. What makes the State think that it will be able to sell 100% of the acreage it offers? This hypothesis should be questioned especially hard since the oil companies know more about where the good reserves are likely to be and, in this year when so much acreage is being offered for sale the oil companies are probably less likely to pay high prices for questionable acreage. It is very important for the State to figure just how much it can get from the sale, for the costs could outweigh the benefits if their projections prove to be way off. The hypothesis given in the DEA doesn't seem to be based realistically or else such nice round figures as 100% would not have been used. Also missing from the economic analysis is any analysis of costs of the current proposed development. The whole reason for the current lease sale being proposed is because the last sale did not pay for itself. Since economics is such an important factor I think a more thorough analysis should be done that is representative of the statement.

The property taxes received by the State from developments in the Beaufort Sea might, if the State is lucky, pay for what the State has to put out to subsidize that development in terms of road construction, construction surveillance, airport construction and maintenance,...etc.

Mr. Waring, of the Department of Community and Regional Affairs, gave what was probably the best testimony at the OCS hearings in February. One of the points he brought up was that the

Federal Government was very inconsistent in first proposing that large sections of the State be put under park or refuge status, and then proposing to lease large areas of the OCS. I find it even more inconsistent for the State to ask the Federal Government to delay leasing in Alaska because the State is suffering the impacts of the Alyeska pipeline construction, because it would cost the State a lot of money to support such developments, and then have the State turn around and lease in the Beaufort Sea where the impacts of pipeline construction are most prevalent, where little is known about ice forces or the biology of the area, and suddenly "the absolute employment demands and unemployment generated by the present Beaufort Sea scenario are within the ability of Alaska's economy to absorb".

The most serious impact of this lease sale is not going to come from the lease itself but from the precedent it sets. If the State goes ahead and leases this area then it has probably lost all chance of delaying federal developments in other parts of the State, developments which may have far more serious impacts than the one currently proposed.

People within the State government have commented that is one has to lease to raise revenues, then the Beaufort Sea is the place where the least environmental impact will occur. Such a judgement is largely based on a lack of information and does not consider the total picture. The Federal Government is in the process of funding a major research program for the Beaufort and Chukchi Seas. Such a program is absolutely necessary prior to development to



to determine if development is actually desirable.

We hope that the State will consider more than just when is the best time to make a certain piece of Alaska open to the market so as to get the best price. There may be certain areas of the coast which should not be open to development because the resources found there are more valuable than oil, or because to develop there could have catastrophic consequences. Just because there may be technical know-how to develop in areas covered by ice a good part of the year doesn't mean that such developments are environmentally safe. I shudder to think what the impacts of large scale oil and gas developments in the Beaufort Sea could be in view of some of the current projections of potential of large scale oil spills melting a significant portion of the polar ice cap.

A side effect of the Beaufort Sea proposed lease sale that should not be as quickly glossed over as the DEA does is the likelihood of a speed-up in the need for a second hot oil pipeline from the North Slope. The DEA talks of adding pumping stations and looping sections of the pipeline. These would be major construction efforts in themselves which are never quantified in the DEA. Scientists attending a recent meeting of the National Academy of Sciences Arctic Research Advisory Committee discussed the use of ice-breaker tankers to transport oil and concluded that current inflation had made the use of such tankers economically feasible and that the technology for such use is available.

Finally, the DEA makes it clear that the State must finally

make a decision as to whether or not Prudhoe Bay is to become a permanent settlement. The information presented indicates that not only would this be economically disastrous but that the fragile environment of the North Slope could not handle such a concentration. The adverse impacts that are occurring now in water supply waste water disposal and solid waste disposal indicate the near total lack of planning, good management, and enforcement of existing state laws that has already let to environmental damage of significance as well as health hazards.

We would like to compliment the State for the fact that a DEA was prepared when it was apparently not required by law. The DEA does, however, make evident the haste with which it was prepared and the lack of information and questionable assumptions is disappointing. We would urge that a major re-evaluation of this proposal take place and that leasing in the Beaufort Sea be held in abeyance until such time as it is justified economically, environmentally, and technically. It is clearly not that time now.

Thank you.

Commissioner Martin: Thank you, Pat, very much. I have a couple of questions. One is that, I must react to the word "re-evaluation for this proposal" and point out to you that we are not quite up to a re-evaluation yet since we haven't evaluated it the first time, thus far, and I think that's what we're doing. In terms of, you mentioned the idea of development on the North Slope and I think one of the reasons that this lease sale has been

at least advanced as a possibility is that it ties with the existing oil and gas development patterns in the State; as opposed to some other things which would be possible and really have not been discussed (such as leasing within the three mile area in the northeast Gulf of Alaska or leasing in the three mile state-owned area and other areas of the State; or leasing in new and largely unexplored, undeveloped onshore areas of the state). The onshores don't have the same oil potential but some of the offshore, state-owned areas may well have that and so I think that has something to do with the advance in this proposal. I wonder if you would comment on that?

Pat Senner: Okay. You have to look at your development to see if the existing support facilities up in the Cold Bay will be able to support what is the Beaufort Sea thing or whether you will have to create a totally new, you know, support system sector. For instance, I think they mentioned that you may need a totally new airport and things like this. I suppose that in terms of Fairbanks you have developed a kind of support facility here but, if you're talking about having to construct another hot oil pipeline, than you're talking about another severe impact; which you may not have if you were to develop, let's say in the Gulf of Alaska, concurrent with the Federal Government.

Commissioner Martin: Whereas it has to be taken out by tankers or some alternative.

Pat Senner: Yeah, you'll take out by tankers to some other area.

Commissioner Martin: On the questions of settlement which you raised, as far as your answer there, as I think you know there's alot of work going on in this administration at the present time with regard to the ultimate result of the North Slope haul road and the settlement in this area now and one of the consideration is the and I would just make this a comment; which of course you're free to comment that the likelihood of a permanent settlement on the North Slope may well be increased rather than decreased by terminating oil activities there. The true danger of a permanent settlement there, being the dedication of the road as a public road leading to the moving of families; and.....on the North Slope as opposed to limiting the road to oil operations and a

Pat Senner: But how long are you going to keep up oil operations with a road closed?

Commissioner Martin: There's an easy answer to that question. As long as there's oil and gas there is the limit of that and I don't think that there's a threat of the oil industry operating there past the time that there's ability to economically extract oil and gas.

Pat Senner: Well, if you're talking about and I would hate to see the State, you know, lease in the Beaufort Sea so that they can keep this haul road closed and that will probably happen.

Commissioner Martin: No, I'm not offering this as a reason, I'm offering this as to the effect that the point oil and gas operations cease on the North Slope. The pressures for opening the haul road to public use will be at its most extreme. Now

hopefully that point we'll be able to be resolved in favor of not creating a permanent settlement there. That would be the pressure point and so that it may well be; we're not facing that immediately, I don't think but, I just suggest that.

Pat Senner: Yeah, well the waste of the gas pipeline and the developments in Pet 4, I don't see as a slacking off in that area for a long time.

Commissioner Martin: Last thing I wanted to ask you about is, you made the statement in your written testimony.....

Pat Senner: .....magazines.....exist and I think the Canadians in their Beaufort Sea research program are currently doing alot of research on the impact of this type which exists if you had a large enough spill under certain conditions that you could severly upset and they are defining parameters a wetback condition might be at the moment. Research

Commissioner Martin: What's, what does a large enough spill mean, I'm interested to know? What

Pat Senner: I don't

Commissioner Martin: a large tanker or something like that?

Pat Senner: I don't the exact figures you'd have to

Commissioner Martin: It sounds like quite an extensive statement, I was just interested what

Pat Senner: Well especially if you're talking, yeah about a blowout; I'd have to, you'd have to look at what comes out of this research to define how big.

Commissioner Martin: I'd be interested if you, if you have

any of that; I'd be very interested to see it just if you have something that indicates the shape at the present time. I

Pat Senner: More specific comments on oil and ice things will be in our written comments on the impact statement.

Commissioner Martin: I'd appreciate that. Lowell?

Lt. Governor Thomas: Thank you, Guy, I don't have any questions.

Commissioner Martin: Thank you very much.

Gil Zemansky from the Fairbanks Environmental Center, Gil. Thank you for coming.

Gil Zemansky: Thank you. I'd like to start by apologizing for two things. One - I've got a cold and a cough, this may take some time and two - I'm going to use a crutch of reading a prepared statement.

My name is Gil Zemansky. I am on the Board of Directors of the Fairbanks Environmental Center, speaking in that capacity today. The Environmental Center is a local membership-sponsored-conservation-education organization dedicated to the protection of the quality of the Alaskan environment through education and action.

The Fairbanks Environmental Center considers the proposed Beaufort Sea nearshore petroleum leasing to be one of the most important issues facing the State of Alaska today. The State is now facing a serious economic crisis. The issue which the Draft Environmental Assessment (DEA) clearly lays before the people of Alaska is whether or not we should take the irreversible action of

initiating development of energy resources in an area of the State which is probably one of the most sensitive, unique, least understood, and difficult to develop for a sum of money which at best will not come near solving our pending economic crisis.

We know little about the environment of the nearshore Beaufort Sea. The assessment acknowledges this point repeatedly. To quote from page 391, "Information...is conspicuously lacking." A statement which Assistant Secretary of the Interior Nathaniel P. Reed made earlier this month concerning his Department's assessment of the potential impact of oil development on Alaskan marine birds, with special reference to arctic areas, could be used with equal validity to describe this assessment, it "reads like a compendium of ignorance."

Large numbers of birds migrate to the area during the warmer months including loons, geese, ducks, swans, sandpipers, jaegers, and gulls. The assessment says of these birds that "Data on fecundity, growth rates, feeding habits, and the responses...(of these birds) to the perturbations of the coastal ecosystem are lacking." A wide variety of adverse impacts which could effect these birds is listed. No suggestions for mitigating measures or research are made. In fact the assessment points out that development as proposed is contrary to recommendations of Canadian agencies which protect birds.

The area under consideration includes the "most heavily utilized denning areas of the northern Alaska polar bear." Disturbance of these bears during normal development operations could

be sufficient impact to eliminate them, without even considering the potential adverse direct and indirect impacts of oil pollution. The United States signed an international agreement in 1973 to "protect the ecosystems of which polar bears are a part," however, as with birds little information is available concerning polar bears, no mitigating measures are suggested, and no recommendations for research are made.

The assessment mentions that six species of whales which occur in the area are "endangered." We are then told that the migration routes and reproductive success of whales may be adversely effected. Nothing else is said. The only thing that is said about seals, which form an important link in the short food chain of the Arctic, is that they will be adversely effected by all of the development evolutions from seismic activity to oil spills - no information, no mitigating measures, no research. Other mammals receive equally short shrift. Alyeska's oil friend the barren ground caribou is the subject of a two page dissertation with no attempt being made to relate the caribou to Beaufort Sea development.

The assessment assures us with regard to fish by stating that "Knowledge of fish in the Beaufort Sea is minimal at present." There are a moderate variety of species of fish in the area including cisco, whitefish, char, flounder, grayling, sandlance, cod and salmon. Some of these fish are taken by local natives for both subsistence and commercial purposes. Again all development evolutions promise to adversely impact this resource. Of particular concern is the know lethal effect of seismic detona-



tions, the destruction of spawning areas and deterioration of water quality resulting from gravel extraction operations, chronic and acute toxicity from oil spills, alteration of nearshore sediment transport patterns and currents, and water supply and waste-water disposal. It is important to note that major quantities of gravel would be required to develop the Beaufort Sea. These quantities might exceed that used to construct the Alyeska Pipeline and develop the Prudhoe Bay field. Where will they come from? The fact is that we do not know exactly how seriously present pipeline gravel extraction operations have damaged fish resources. The U. S. Fish and Wildlife Service is now considering proposals for a four year research project to determine the impact and to develop mitigating measures. This research of course, should have been done prior to the Alyeska Pipeline project. There is no excuse for its not being done prior to Beaufort Sea development.

Chronic toxicity from oil pollutions is documented for lower trophic level organisms and fish, although little information specific to Arctic species is available. There is no question that spills will occur and that oil will enter the environment on a chronic basis. This may have a greater adverse long-term impact than the more spectacular catastrophic spill which could occur due to a blowout. It is well known that large volumes of oil are routinely spilled during construction operations on the Alyeska Pipeline. We will never know exactly how much since there is strong evidence to indicate many of these spills are not

reported. Cleaning up these spills is extremely difficult in arctic winter conditions. The difficulty is increased an order of magnitude under the conditions which prevail on the Beaufort Sea ice. Should oil be introduced under the ice the technology to clean it up does not exist. There has been some degree of speculation in the literature concerning the effects of a major under ice spill. One Canadian authority suggests that "the extent of the damage to marine life could be on a scale not yet witnessed by man." Others discuss the possibility of albedo changes resulting in melting of sizable sections of the ice pack. Besides direct large-scale toxicity to aquatic organisms oil would likely be "pumped" from lead to lead which would result in large scale lethal effect on seals and polar bears at any time of the year and to whales and marine birds at specific times. The assessment discusses these points, however, it does not present solutions; it does suggest some research.

The assessment makes public for the first time the information that water supply problems in the Prudhoe Bay area have resulted in the pumping dry of pockets in the Sagavanirktok River with subsequent destruction of overwintering fish stocks. This is important to note since the identified problem could have a major adverse impact on a potentially sensitive fishery about which little is known and also because this problem comes under the jurisdiction of three different state agencies, not considering the State Pipeline Coordinator. Appropriate action by any one of these agencies at any time during the previous five years (lumping

the new Department of Environmental Conservation with its precursor (the Department of Health and Welfare) could have identified and avoided the problem. The existing law provided the necessary mechanism. These are the agencies which we are told on page 413 will "To the best of their ability" take mitigating action to limit adverse impacts to fish (the Departments of Environmental Conservation, Fish and Game, and Natural Resources). Their best does not appear to be very good. I received a letter from Commissioner Mueller of the Department of Environmental Conservation yesterday in which he notes the serious lack of planning for water supply and waste disposal at Prudhoe Bay. He attempts to justify this lack of planning by stating that it "is not at all unusual in Alaska" and then passes the buck to the Department of Natural Resources, completely overlooking the responsibility which his department has with regard to water supply. Perhaps he feels that the failure of his department to issue water supply regulations, which is a statutory responsibility, relieves him in this case.

Wastewater disposal is also discussed in the assessment. The discussion attempts to apologize for the failure of the industry at Prudhoe Bay and Alyeska along with the pipeline to achieve minimum state standards which they have been well aware of for the past five years. The blame is placed on technical problems related to temperature and lack of qualified operators. It can easily be documented that temperature is not a factor of concern for these treatment plants, all of which operate within

heated buildings. While there is some truth that unqualified operators have predominated this avoids the real reasons for failure. Those reasons are:

1. Initial poor planning by industry;
2. Failure of appropriate state agencies to plan for development or enforce state environmental laws;
3. Overloading, improper design, and improper operation of treatment equipment by industry;
4. Failure of appropriate state agencies to monitor treatment operations and discharges by industry and failure to take enforcement action when violations of state environmental laws became apparent.

I think these points are particularly important because they're specific to this one field but, they may also apply to other areas of planning and development. If they can't do this part of the job right, what's to lead us to believe they'd do the rest of it right?

There is no case along the Alyeska Pipeline where action by a state agency resulted in personnel reductions. That would be unacceptable to Alyeska. Rather what has occurred is stated in the assessment as the "discharge of poorly treated or raw (sewage)...to the surrounding area." This has resulted in avoidable pollution of the environment and potential health hazards, all in violation of state laws and in the case of Alyeska in violation of both state and federal stipulations; and I would assume that we're talking about the same kind of stipulations and laws applying

to Beaufort Sea development. The assessment indicates this is something that we will have to expect. There is no technical reason why we should, only the failure of industry to obey the law and government to enforce it.

The assessment indicates that the proposed lease sale is a response to the State's pending economic crisis. The roots of this crisis are discussed in the Department of Revenue publication "Alaska '75: Facing the Crunch." This publication presents six other alternatives including the rather drastic measure of adopting sound fiscal management. Perhaps one of the better alternatives is the sale of oil and gas options. These alternatives should be carefully studied since, as the publication points out "It would be foolish to hurry the development of an area and risk sacrificing its long term value just to cure (or attempt to cure) a short term fiscal problem. As the assessment notes, "any sale of oil and gas leases is attended by undesirable environmental and social effects."

There is good reason to believe that the State's economic problems have been brought about largely as a result of the Prudhoe Bay lease sale. The assessment indicates that between 1966 and 1973 the State's population increased 16% while state and local government employment increased by 85%. Most of the increase has occurred since 1969 in the terms of state employment and has been accompanied by a phenomenal state budget increase of approximately 400%. The potential deficit by 1978 is estimated as high as \$850 million, nearly the amount of the 1969 lease sale.

The fact is, as was clearly brought out by Kevin Waring when he testifies at the Outer Continental Shelf hearing in February for the Division of Community Planning, population growths accompanying the development following a lease sale require a tremendous amount of governmental spending to provide services. The assessment fails to mention this cost of the proposed lease sale. It would indicate that the State has not conducted a realistic benefit-cost analysis of the proposed action.

The assessment touches briefly on the impact of the Alyeska Pipeline project on communities in the State as an aid to assessing the probable impact of the proposed Beaufort Sea lease sale. This presentation is particularly shallow. It appears from data that is presented that the impact was only measured prior to 1974. The statement is made on page 360 that "many communities (have) complained that impacts associated with Prudhoe Bay and the Trans-Alaska Pipeline had failed to materialize." It might be asked which communities? Certainly not Fairbanks, Anchorage, Valdez, or the smaller communities along the pipeline route. You've come to the wrong town to say pipeline impacts have not materialized. In Fairbanks for example:

1. Severe child neglect and abuse cases are up 178.8% and total child welfare case load is up 84.5% comparing August 1974 to August 1973;
2. The crime rate increased 24% overall and Fairbanks now ranks number one on the FBI list of the top fifty metropolitan crime centers in the nation, based on

a statistical index of homicide, rape, robbery, burglary, assault, larceny, and auto theft. At the same time the police department is understaffed and a significant number of officers have resigned to work on the pipeline;

3. Housing is critically short. We are told there is a 0% vacancy rate and 103% occupancy rate;
4. Traffic flow in Fairbanks increased by 36% comparing January 1975 to January 1974.

Similar impacts are now noticeable in Anchorage to say nothing of Valdez. The assessment admits that "the actual impact of activity in the Beaufort Sea remains speculative" but that it might "add to the stresses placed on Alaska's economic system by other ongoing petroleum activity and may only serve to exaggerate any unfavorable impacts.", depending on timing.

The gamble extends to exactly how much money would a Beaufort Sea lease sale produce to apply towards the pending short-term economic crisis? The assessment indicates, through a questionable analysis, that the figure \$160 million is likely, while admitting that the oil companies have a better idea than the State as to how much oil might be under the Beaufort Sea and that the sale might bring in as little as \$20 million. In any case it won't be enough to solve an \$850 million deficit by itself and may not even help very much. Competing federal lease sales on the Outer Continental Shelf, encouraged by the State's sale, might drive lease revenues even lower with all of the potential adverse impacts

still there.

There are simply too many serious unknowns. The risk is too great. The assessment even asks us to take the risk of burying a hot oil pipeline in the permafrost under the Beaufort Sea floor which some information indicates may be ice-ridge and includes ice wedges. How would this line remain intact? Insulation alone won't do it and no other measure is cited. If a lease sale is ever to occur in the nearshore Beaufort Sea area the advice of the Department of Revenue should be heeded and it should be "prefaced by thorough environmental research, coordinated with federal and private leasing activity, and most importantly, be consistent with well planned development." The assessment reminds us that the type of development should "wisely be undertaken only after such a planning process (as a statewide coastal zone management plan) was authorized and under way." Such legislation has not yet been passed and the chances of passage are unlikely this year. With regards to research, an appropriate place to start would be to examine the National Science Foundation's proposed Arctic Offshore Program. The program outlines six years of research at a funding level of \$60 million and concludes that "The cost of the program is negligible compared to the possible benefits." Such a program should receive the full support of the State and possibly be supplemented by its own program.

Although the State should be complimented for having prepared the assessment when there does not appear to be a legal requirement to have done so, it is also obvious that the proper prepara-



tion of such an environmental assessment is an appropriate method of planning that should be utilized as a matter of course for such an important proposal. Unfortunately, while the assessment is undoubtedly the result of a great deal of well intentioned effort it shows the flaws that are inherent in "two-month marathon." Frankly, I do not see how an intelligent and objective person can study this assessment and not conclude that a great deal of additional research, planning, improvement in technology, and upgrading of governmental agency ability to function is necessary before a lease sale in the Beaufort Sea area can be seriously contemplated.

This statement is a summary coverage of the detailed comments which the Fairbanks Environmental Center will be submitting in writing to you within the next few days. We're still in the process of typing those up at this time, it may take us awhile. I hope you'll accept them when they're available.

Commissioner Martin: June 15, Gil, is the point at which we would like to have your comments.

Gil Zemansky: June 15, okay. I've had to limit this statement somewhat for brevity in a public hearing and therefore haven't covered all the points we'd like to have covered. It does however, cover most of the major areas which we feel are important and we feel must be seriously responded to by government; the government is to justify the faith which people have vested in it. That's the end of my statement.

Commissioner Martin: Thank you. I'd like to thank you for

a really comprehensive statement. I'm going to resist the temptation to ask you, what would you do if you were Commissioner of Natural Resources?

Lt. Governor Thomas: You might ask him if he uses oil and gas at all.

Commissioner Martin: I think it was comprehensive and very helpful. Just because we're in throes of going through the budget right now, comment to you in a way there's an irony in it that is almost unsolvable and that is that the upgrading of our state capability to deal with these problems in which I share your desire fully is a contingent on the revenues to do it. So it's almost a "Catch 22" situation as I'm sure you understand. I share your desire with you wholeheartedly as I think most of us do. We feel some of the same tensions and I think if we could guarantee that the revenues would go toward that it might make it a lot easier. It is a problem but, I want to thank you very much for your statement.

Lowell?

Lt. Governor Thomas: Our thanks too. I want to also just let you know because you'll be interested; I think you raised the point that we're about to undertake a cost control project within state government, efficiency in state government. Maybe you won't believe it when we do it but, it will save some money.

Gil Zemansky: I recognize the State has some serious economic problems and I hope those efforts will help in that direction.

This is your copy, I have it addressed to Mr. Weeden.

Commissioner Martin: Thank you much. You don't think it's subversive for

Larry Eppenbach: I don't really have any special comment, I too appreciate not only.....political comments. I might point out, I hope that our deficit is not totaling \$850 million. That's the estimate assuming up to one year delay on the pipeline. I think we should all.....idea that the pipeline is built on time.

Gil Zemansky: Well, I would like to see it built on time but, the environment nt can be protected at the same time. I think that considering Mr. Champion's assessment and considering what's happen to date and what continues to happen there's likely going to be a substantial delay.

Larry Eppenbach: That's certainly a possibility.

Gil Zemansky: Thank you.

Commissioner Martin: Thank you. Going back to the top of our schedule is Mr. Baer still here from the Chamber of Commerce? Welcome.

C. W. Baer: Welcome to you. I want to apologize for being late this morning.

Commissioner Martin: Well it is our pleasure to have you and we look forward to your statement.

C. W. Baer: Delighted to be here.

I've had the opportunity because I was late of hearing some excellent testimony on many of the technical aspects of the report and the proposed leasing of the Beaufort Island Sea areas. I'm not qualified to comment on the technical aspects but, I would

like to discuss briefly with you some of the economic aspects of an orderly development of our natural resources.

I think that we're all aware of the magnitude of the oil reservoir that we have on the North Slope. Every day that goes by we're finding that the scope of that reservoir is increasing and without any question it is a major oil reserve. This being the situation and considering the energy crisis that our nation, as well as most of the world, is now experiencing; I don't think that it can be seriously questioned that the development of those resources is going to take place and it should take place. What we're concerned with and what has been expressed here many times this morning is the orderly development of that resource and the orderly progression with which the various parts of the resource are developed. I would like to discuss briefly what this orderly development means to Interior and Arctic Alaska and Fairbanks in particular.

We were started, the city of Fairbanks, started as a service and supply center for the gold rush industry in 1902. We have been a boom/bust community ever since that time. Various times activity in the gold fields raised up to great heights and for one reason or another development along those lines slowed and we dropped back. Immediately following World War II we rose to new heights with the development of our military installation and the development of the DEW Line across the north. But it's been up and down. Then in 1969 and 1968 they brought in the discovery well at Prudhoe and immediately we were subjected to another boom.

Preparations for the lease sale in 1969 and many in this area as well as the State and elsewhere felt the development of those oil resources was under way and would be a continuous thing. So a considerable amount of money was spent in the Fairbanks area getting ready for this development. Local merchants expanded their operations and resources; others moved in to service this development and then of course for reasons we all know the development did not take place but, we waited five years for the studies to be made and before the development of those oil fields continued and the pipeline started to be built. I don't think there's any question but what probably that delay was worthwhile and that we're going to do a better job today than we would have done in 1969-70. However, it did again contribute to the boom and bust situation. Now in Fairbanks and Interior Alaska and in the Arctic, we have had a full year, a little over a full year, of intense economic activity associated with construction of the trans-Alaska oil pipeline. What it has meant to Fairbanks is as been graphically pointed out here this morning not all good but, from an economic standpoint and from the overall good to the community through the years it has been good and it continues to be good. It has brought us for the first time an economic base, a widening of the economic base that has every evidence, every promise of being an economic base that we can continue that will be a continuous thing and that will give us a base through a period of years; and with it we have been able to develop many of the smaller resources that we have. Our agricultural community is

building and developing, our small but viable timber industry is building and developing. We're beginning to get a more stable service and supply industry keyed not only for the pipeline but to other activities and all of this in a period of a year and it will, it will go on for the next two years purely on the basis of the construction of the pipeline and the development of the oil fields in the Prudhoe Bay area. But what we're concerned with is an orderly development down through the years. Those resources are going to be developed. I think it behooves the State in the interest of its citizens in the Interior and Arctic Alaska, as well as the rest of the State, to develop those resources in an orderly way so that it is a continuing development and those of us in the Fairbanks area and the business community in the Fairbanks area will have an opportunity to use the resources we have developed in the service and supply sector, to continue the service and supply of this development. If we're going to adopt a policy of developing one part of the resource and then waiting five - ten years and then developing another part then we're going to have the same boom/bust thing we've had year after year down through the years. Whereas we now have the facilities here we now have the ability to service this develop and it presents, gives us a very viable economy. So that if we develop those resources in an orderly fashion, we will be able to preserve that economic activity here and expand into the more permanent features. We've had the oil now and we're going to have the gas and we're going to use that gas in Alaska; and we're going to have a petrol chemical

industry; and we're going to have development that will be long-ranged, permanent in type. Those things will come and there is no reason at all why they shouldn't come concurrent with and while we're still having the development phase of this thing so we don't have the boom and bust; and there's one other aspect of the orderly development of our economic resources and our natural resources. In my opinion, the most important aspect for long-range development, economic development in the Interior and Arctic Alaska.....to develop the minerals that are there but, a means of getting them out, a prospect of a means of getting them once they're found. This will take a period of time but it all fits in with the orderly development and fits in giving Fairbanks and Interior of Alaska, Arctic Alaska an orderly growth, an economic growth that we can sustain that will sustain us. So, we favor the lease sale and we favor on a timely basis because it's important not only to the State as a whole but particularly to Fairbanks and the Interior and with that I conclude my remarks.

That's the basis of our position at this point and I certainly commend you folks for being here with us and holding the hearings and getting the input from the communities.

Commissioner Martin: Mr. Baer, thank you very much, we appreciate your remarks and I have no questions. I appreciate you being here today and we thank you very much.

Lt. Governor Thomas: I've certainly learned about the ..... ups and downs.....

Commissioner Martin: That's the end of our scheduled

witnesses. Now are there others who care to make comments at this time. Sir?

Richard Furniss: I don't know if these others would like to speak but I'd like to.....

Commissioner Martin: I think you're presently last.

Richard Furniss: Okay, I'm prepared to.....

Commissioner Martin: Will you identify yourself for our records please.

Richard Furniss: Certainly. My name is Richard A. Furniss. I'm a resident of Fairbanks. I'm employed by the Department of Fish and Game as a Sport Fish Biologist. My title is Arctic District Fisheries Biologist. I'm responsible for managing the fishery resources north of the Brooks Range. The type of work that I've been doing

Commissioner Martin: Furniss, could I interrupt you at this point, I don't want to upset you. Are you making a personal statement at this point or statement on behalf of

Richard Furniss: That's right, I'm going to clarify that and I had planned on clarifying that. What I'm going to say is strictly a personal statement but it however, is based on my knowledge of the resources in the Beaufort Sea which are directly related to my work.

Commissioner Martin: I appreciate that very much.

Richard Furniss: But what I am saying is strictly personal and it may not reflect the feelings of the Department of Fish and Game or my supervisors.



Commissioner Martin: Thank you. I ask that question as much for your own use as ours.

Richard Furniss: Certainly.

The work that I have been doing in the past several years on the North Slope has included in particular a study of the Prudhoe Bay fishery resources, and I might reference this to what Mr. Carr had to say, the fellow representing Atlantic Richfield Company; in my capacity as the Arctic District Biologist we were supported by ARCO to do the specific study of delay into the causeway that they built last summer in Prudhoe Bay. So that there should be any questions that you have, I know you are concerned about some of the things he said. I might be able to give some more specific information relating to that

Commissioner Martin: I might say that

Richard Furniss : that project

Commissioner Martin: that the written record will certainly be open if you have some, I know you've been preparing your remarks there, and it will be open till June 15 and I would encourage you to not only fill out your own remarks but to respond to the testimony of any of the witnesses.

Richard Furniss: Okay fine. I might add that I hadn't planned on saying anything today but as things developed I decided I would.

In this particular study we set nets at eight different sites and monitored the species composition and movements of the fisheries or the various fish species within Prudhoe Bay. We did this

during two different weeks last summer. In addition to doing that and by the way, the report of that work is available through Atlantic Richfield Company in Anchorage and anybody that would want to stop by there tomorrow I'm sure could pick-up a copy from Dr. Paul Falls at their office there. In addition to doing that piece of work, I have also been responsible for doing life history studies in the pipeline corridor; specifically working on arctic char and grayling. I've also been responsible for looking at aquatic resources in most of the bodies of water (lakes and streams) of the North Slope region and I've been responsible for monitoring some of the development within the pipeline corridor and also studying the proposed Arctic gas pipeline (the several routes of the arctic gas pipeline including the ones through the Arctic National Wildlife Range) and along the coast.

I have been involved to a considerable degree with the monitoring of the development and working with the Joint Fish and Wildlife Advisory Team in the pipeline corridor. I'm specifically in that respect, I've been engaged in an over-wintering study of fishes in the Sagavanirktok River drainage.

Enough on the background; I might say that there are a few biologist who have studied aquatic resources of the lease area and I am one of the few and I'm also familiar with the recent literature and I think that is where I would like to make my greatest contribution in terms of what has been said about this supposed gap in the literature because as you know in the Draft Environmental Assessment there are a number of statements indicating

that the literature is scant in that respect and the other individuals, particularly Dr. Brewer, have indicated that there is much more information available than what the Draft Environmental Assessment would lead you to believe.

Well I feel that there is a considerable amount of information that has been left out in the Environmental Assessment. I myself wrote the section on fisheries. I'm giving you a background in terms of how we went about it. We were approached about, I would say, 15 or 20 days prior to the time it was supposed to be presented or finalized by the various agencies and the date we were given to have our submissions in was the first of March. We worked day and night for about two weeks preparing a statement and that isn't giving an individual very much time, really, to prepare a paper of this magnitude; and so, undoubtedly there are going to be a considerable number of papers in obscure journals and in people's files that are unpublished and so forth that are left out; and I would be in agreement that considerable amount of information was left out of the assessment. Mainly due to the fact that we weren't given enough time to do a proper literature search and I think this would be one area of immediate future work. It would be a profit bibliographical search.

I might say that considerable amount of the information that has been left out probably was done by biologists who worked in the area prior to oil development. These earlier researchers such as Stephenson and Leffingwell, who did work prior to the recent development can add a lot to our body of knowledge. However,

in recent times and particularly in my field of expertise, the arctic aquatic resources; research has been minimal and I think that is important to point out that in terms of recent times there is little aquatic biological information available and that is clearly stated in the Environmental, Draft of the Environmental Assessment. For instance, my study of Prudhoe Bay fishery sources in the summer of 1974 was the first detailed fisheries of any type in the marine environment at Prudhoe Bay. This fact is utterly amazing in view of the great ecological concern on the part of environmentalists who questioned the ecological desirability of oil development in that region and who blocked pipeline construction with the hope of obtaining further biological data so that development could be done in an environmentally sound manner.

There's been no great rush to complete aquatic research in Alaska's far north. My point is that today little is known of the Beaufort Sea aquatic resources.

Presently we have proposed (and it has been accepted by the Federal Government) a study of the nearshore fisheries habitats between the Colville and the Canning River and this study will probably run anywhere from 3 to 5 years; is presently funded for a year and a half but we expect we will be funded for 3 to 5 years.

Commissioner Martin: Can I just interrupt you for a second? That is part of the Federal OCS Baseline?

Richard Furniss: That's correct. We're going to be employing two permanent biologist and two temporaries to work in this

particular region and it is my feeling that this particular project when it is completed, will provide us with the information that we need in terms of the lease area.

The question now is not a matter of development or not but a matter of when? In the lease area as a biologist I am concerned with the protection of biological resources large and small, economically valuable or not. Facing the reality that our petroleum resource will be developed. Our only approach now is to do it properly. There is no question that further aquatic research is necessary and that I feel the OCS project as we have it outlined will fulfill the need and of course this requires a few years of work. I feel that in 2 to 3 years the results of this study will provide us with sufficient data to lay the ground rules for proper oil development from the aquatic standpoint. Any oil development done prior to the completion of that study would be negligent. I do feel that we will have the necessary nearshore aquatic information to develop Beaufort Sea offshore area between the Colville and Canning Rivers.

From the aquatic resource standpoint development could begin in 2 to 3 years but not feasibly before that time. When the OCS work is completed we will have the basis to setup the ground rules which I mentioned to minimize oil development impact on aquatic resources in the Beaufort Sea. I think it is very important to consider the fact that we do need a few years of time to complete the research that we have planned. Perhaps a lease sale now with a lapse time of 2 to 3 years before initial

development is the most logical approach and I do feel this is the most logical approach.

I will conclude by observing that consideration is being given to leasing areas in the Gulf of Alaska and Bering Sea Outer Continental Shelf areas in addition to the Beaufort Sea. In my opinion from a biological standpoint developing the Beaufort Sea, Outer Continental Shelf area, and at nearshore areas is the most desirable by far of the three areas at this time. I say this because the Beaufort biological resources are the least valuable, in my opinion, of the three areas and I think that this is a point of consideration which hasn't been brought up at this time; and that will conclude what I have to say.

Commissioner Martin: Furniss, I want to thank you very much. I know that you put that together rather hurriedly and I have no questions at this time but I very much appreciate your coming forward and I hope you'll expand on those remarks and offer them in a form that is much more acceptable to you in writing. I'll look forward to receiving them and they're very helpful. I think this is exactly the sort of thing we have to iron out before we proceed with development.

Lt. Governor Thomas: Well yeah. I want to thank you too, Mr. Furniss. I just wondered why you didn't think it might not be best to defer a sale, the reason which you gave for a couple to three years until all the information was in rather than go ahead with the built-in delay in development?

Richard Furniss: The reason I feel that is simply because

I think for the very reason that this hearing is being held that the State is in a financial crunch and they want to lease something and they're going to lease something I would imagine and though the most logical way to go about it is to lease the Beaufort Sea and alot of researchers to do two or three works, two or three years of work prior to the actual development of the field. Therefore, they'd realize the revenues of the lease sale yet allowing time enough to study the area and get biological data that's necessary to draw the ground rules for development and proper development. That's why I indicated that.

Lt. Governor Thomas: Thank you. I think a serious question though as to whether the State would derive more money by doing the one or doing the other; I don't know how we would ever know. Somebody has to make that judgement, such as the financier over here.

Larry Eppenbach: Not at all, not at all; even the audience I think might be.....I appreciate as well.....report being in writing. I have no questions.

Commissioner Martin: Easy, do you have a question?

Easy Gilbreth: Could I ask a question?

Commissioner Martin: You sure could.

Easy Gilbreth: We've heard some testimony in Barrow and then we've heard testimony here both of and the Environmental Assessment statement talks about the polar bear denning areas in here. We've heard this morning conflicting testimony on this about the barrier islands, I wonder if you would care to comment on that?

Richard Furniss: Personally I'm not qualified to speak about polar bears because my field expertise is in the, particularly the fisheries field, as aquatic resources and I must admit that I've not worked with polar bear nor have I seen any in the work that I've done up there.

Easy Gilbreth: Okay, thank you then.

Commissioner Martin: As there are no other witnesses then we'll

Dr. Wood: How.....being.....list.

Commissioner Martin: We will cancel it. All of the written request have been heard and those who were here and wished to give

Dr. Wood: Well I telephoned your office and .....the afternoon session.....

Commissioner Martin: Dr. Wood, your request did not arrived in our office by the deadline we would be very pleased to hear you.

Dr. Wood: I telephoned your office

Commissioner Martin: I understand that. It would be our preference to hear you at this time if that would be alright and we would be very pleased to do that.

Dr. Wood: .....be very.....

Commissioner Martin: Yes sir, anytime you wish to be absolutely fine.

Thank you very much for coming I'm sorry we, I didn't pick-up on the messages you left but

Dr. Wood: My name is William Wood, I'm the Executive Vice-



President of the Fairbanks Industrial Development Corporation.  
President of the Fairbanks Industrial Development Corporation.  
This is a non-profit community service group, it has no government connections, no political connections of any sort. The primary purposes is to assist in every way possible to develop a stable, diversified economic base for not only Fairbanks but for the entire surrounding area. To make what contributions we can to state utilization of its resource base any time in an orderly fashion and this has been presented to you by others this morning. I would like to say from hearing the discussions that I am greatly in sympathy with your position, Mr. Commissioner. It's sort of a "Hamlet" like matter where there's so many things that might be done that the inclination is always not to do anything and then tragedy happens without your being a participant in it directly. So, you have a very tough matter that's proposed here.

I would make this observation. On the study, and I've been involved in education for about 45 years very keenly interested in the advancement of the frontiers of human knowledge, but as long as the human mind is resourceful as it is and as fertile as it is there's never an end to study so it doesn't do you a bit of good to know that given another 30 years you'd know more about the situation and would have a much more comprehensive base upon which to make a decision. But there is time for doing as well as time for pushing back the frontiers of knowledge and I suspect that humanistic principle comes into play here and the time is to act and I certainly don't envy you the decision that you have to

make.

Reviewing the various options that have been set for us rather sketchedly and vaguely in the newspapers, in the magazines and through the media; the government frankly doesn't lay out all its options as, at least it doesn't give as clearly to the people as the people would desire through methods now used, I think all these options to get out of a fiscal bind that in judgement of Fairbanks Industrial Development Corporation people that now numbers some 88 and new pledges I think bring it to over 100 soon. Fiscal bind should never have happened and the people that we elect to represent us participated in seeing that it did happen but now that it has happen we got to get out of it somehow and if all the options have been laid before us sketchedly, vaguely in the papers it seems to us that the lease sale of this area (the Beaufort Islands, the Beaufort Sea) is probably the one that will bring the least onerous set of problems for the future and I think it's saying that we said something meaningful to our elected representatives that they will use some descretion in making there fiscal judgements for the future. It will not get into this again, I'm rather certain if we do that we may have a new set of elected representatives.

I would be happy to submit something in writing before the 15th which would be a little more in detail than this but basically the Fairbanks Industrial Development Corpotation; now that we're in the problem, they're strongly in support of using this means of getting out of it and we see no gain in delaying that

decision even though, it is a tough one for you to make and we're quite sympathetic with your position.

Commissioner Martin: Thank you, Dr. Woods.

Dr. Woods: Thank you.

Commissioner Martin: There are no further witnesses we will adjourn the hearings at this point and invite all those who testified as well as others to submit written comments by the 15th if they so desire.

Thank you very much for coming, we appreciated having you here.

Easy Gilbreth: Do you have anybody that didn't sign in?

Commissioner Martin: Yes, anyone that didn't sign the attendance sheet, we would very much like to have you do that and thank you very much.

**Submitted Items  
and  
Written  
Testimonies**



## FAIRBANKS ENVIRONMENTAL CENTER

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James E. Kowalsky, Director

12 June 1975

Robert B. Weeden  
Director  
Division of Policy Development  
and Planning  
Office of the Governor  
Juneau, Alaska 99801

DEPARTMENT OF  
NATURAL RESOURCES

JUN 16 1975

RECEIVED  
JUNEAU, ALASKA

Dear Dr. Weeden:

Enclosed are the comments of the Fairbanks Environmental Center concerning the Draft Environmental Assessment (DEA) for the Proposed Beaufort Sea Nearshore Petroleum Leasing. The comments are to augment the oral testimony presented on behalf of the Center by Gil Zemansky at the 28 May 1975 hearings held in Fairbanks, Alaska.

The Center is very pleased that Governor Hammond requested an environmental assessment be written on this project and that we, as a citizen's organization, were allowed to comment on the project. We hope that assessments will be written in the future on other major projects being contemplated by the State. Hopefully in the future more time will be given the people writing the assessment to collect all pertinent data.

Although the DEA on the whole was a fair presentation of the limited existing data and options, several sections contained significant errors of fact and many were deficient in information which would be essential prior to any consideration of leasing in the Beaufort Sea. Most of our concerns about the lease are discussed in more detail in our comments, but are summarized here for your convenience.

1. We are very concerned about the ramifications of the State holding an offshore lease at this time. In particular we are concerned that a State Beaufort Sea lease would nullify the State's case for slower development of the Alaskan OCS by the Federal Government. It would be inconsistent for the State to ask the Federal Government to hold off on their leases until adequate baseline data is collected, and a coastline management plan is developed and then lease in the Beaufort Sea before either of these tasks are accomplished. Three research programs will begin soon in the Beaufort Sea - the BLM-NOAA OCS research project, the NSF Arctic Offshore Program, and the Canadian Beaufort Sea Program. Preliminary data from these projects will be available in the next few years.

2. "With their economy so dependent upon the pipeline, many Alaskans are wondering if the raw, sparsely populated state has the leadership to deal with the oil companies...The consortium always seems to get its own way in the legislature and with state agencies. Says Democratic State Senate President Chancy Croft: 'There's still the underlying fear that if we assert ourselves too much, we'll kill the goose that lays the golden egg'." (Time 2 June 1975 p. 18)

The word "pipeline" in the above quote could easily be replaced with "Beaufort Sea lease". Unless the State loses its fear of the oil companies, any stipulations written into leases will only be adhered to when it is convenient to the oil companies. From our experience with state enforcement of lease stipulations and state laws on the Alyaska pipeline project we are skeptical that lease stipulations will be an effective way of preventing unnecessary and serious environmental damage.

*'Gateway to the Arctic'*

The State is in a real bind on the matter of developing stipulations. It will not have the necessary data to develop good stipulations until some of the research projects mentioned earlier are completed. By the time the research is done the State's economic crisis will have passed. With passage of the reserves tax it may already have passed. We are quite certain that the oil companies are going to use the State's economic crisis to convince the State to hold leases now, with poorly written environmental stipulations attached.

3. Stating at this time that no serious environmental damage will result from the development in the nearshore zone of the Beaufort Sea is outrageous. As discussed in our comments, there is no way of determining the modifications of the albedo of the Arctic Ocean by oil spilled on ice. Modifications could be very serious, and there is some speculation that any alterations of the ice cover could seriously effect world weather patterns. Though it is unlikely that spills from the State lease alone would be serious enough to cause these types of alterations, continued spills from oil developments all along the Beaufort Sea Coast might have catastrophic consequences. Of particular concern would be the use of ice breaker tankers to transport Beaufort Sea oil to east coast markets.

Bird, mammal, and fish populations will be adversely impacted by Beaufort Sea development. Whether these populations will be able to remain viable is an important question, particularly in regards to the marine mammals located in the affected area. The area proposed for lease is one of the most biologically productive areas along the Alaskan Beaufort Sea coast. Disruption of this ecosystem could lead to the Beaufort Sea coast becoming a barren desert.

The barrier islands are important both as breeding grounds for seabirds and polar bears, but also as a line of protection against the powerful pack ice. Unless the State develops very strict stipulations about how these islands can be altered and enforces these stipulations rigorously, the environmental damage done to this area could be catastrophic.

In summary, we think this is a poor time for the State to hold a lease in the Beaufort Sea. Because of the large amount of land being offered for lease this year and because of the cost of developing in the Beaufort, the State will probably not get near as much as it would like from a lease sale. On the other hand, because the State does not have the information it needs to develop good stipulations, unnecessary and serious environmental damage will likely occur. The end result will be that the State has sold out cheap.

Our concern, however, is not merely with the timing of the proposed lease sale. As we have stated at the hearing, in our detailed comments, and above the timing is important primarily because of the serious technical and environmental ramifications of action prior to development of knowledge. These same considerations may very well preclude leasing, as was stated in the National Science Foundation's Arctic Offshore Program, after knowledge is attained.

News articles at the time of the hearings indicated that State officials, including Governor Hammond, consider leasing in the Beaufort Sea to be "inevitable" and that no serious adverse environmental impacts have been identified. Such news coverage, apparently encouraged by the State, is a misrepresentation of the facts and is misleading to the public. If the news coverage is an accurate representation of official State policy it would appear that the State is conducting this investigation

Letter to Dr. Weeden  
12 June 1975  
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only as a matter of form. We hope this is not the case. The "inevitability" of this proposed leasing may be more a function of oil industry influence and government mismanagement than any other factor.

We have prepared these comments in good faith. The proposed leasing in the Beaufort Sea is an important issue with serious implications and we hope both that our comments, concerns, and views will be carefully considered and responded to and that the State will exercise good judgement and proper planning procedures prior to reaching a decision in this matter. Hopefully the decision will reflect the best interests of the people of Alaska in the long run rather than only short range economic goals.

Sincerely,

*Gil Zemansky*

Gil Zemansky  
Board Member  
Fairbanks Environmental Center

*Patricia Senner*

Patricia Senner  
Director for Regional Affairs  
Fairbanks Environmental Center

cc: Guy Martin  
Honorable Jay Hammond  
Honorable Chancy Croft  
Honorable Mike Bradner



# FAIRBANKS ENVIRONMENTAL CENTER

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James E. Kowalsky, *Director*

June 5, 1975

## COMMENTS OF THE FAIRBANKS ENVIRONMENTAL CENTER ON THE DRAFT ENVIRONMENTAL ASSESSMENT ON THE PROPOSED BEAUFORT SEA NEARSHORE PETROLEUM LEASING

The organization of these comments follows the labelling and pagination of the DEA. Where possible, references have been listed with comments.

### I. Introduction, Summary, and Conclusions

#### A. Introduction

pp. 7-9

Comment: These pages make it clear that the motivation for a Beaufort Sea lease sale at this time is purely economic. The publication "Alaska '75: Facing the Crunch" (Alaska Department of Revenue (1975), Juneau, 16pp) discusses in simplified terms the "pattern" of poor state government planning and management which followed the 1969 Prudhoe Bay lease sale that commenced with a 77% governmental spending increase in 1971 and has left us now facing a potential \$850 million deficit by June 1978 (nearly the amount of the lease sale). Seven alternatives are contemplated, of which one is additional oil and gas lease sales. Concerning petroleum resource development this publication states quite correctly "It would be foolish to hurry the development of an area and risk sacrificing its long term value just to cure a short term financial problem. Any lease sale would have to be prefaced by thorough environmental research, coordinated with Federal and private leasing activity, and most importantly, be consistent with well planned development."

A thorough environmental research program is absolutely essential to ensure feasible construction and operation design standards as well as to minimize adverse environmental impacts. Such a program could require at least five years (National Science Foundation, (1974), The Arctic Offshore Program (AOP): A research program focused on the development of the natural resources of the Arctic continental shelves, NSF, Washington, D.C., 51pp). The DEA states that, "any sale of oil and gas leases is attended by undesirable environmental and social effects". We would encourage the State to seek other solutions to the economic "crunch" such as sound fiscal management and oil and gas option sales. As further discussion will note, the impacts of an oil and gas lease sale could very well worsen the State's long term economic position.

#### B. Summary of Findings: Direct Effects

pp. 10-23

Comment: These pages summarize the report's findings. To avoid repetition detailed comments will not be made on them, at this point.

#### C. Linked Effects of Beaufort Lease Sale

pp. 24-27

Comment: The DEA states that a lease sale "will have the effect of adding to current rapid growth in Alaska's population, economic activity and population-serving facilities... Moreover, 'windfall' state revenues can invite a pattern of public expenditures that cannot be sustained without yet another increment in State revenues (additional leases of resources)." That is, in other words, this lease sale would intensify the adverse effects of the Prudhoe Bay lease sales that led to the economic "crunch" Alaska is now facing and thereby continue the "viscious circle" that appears to be developing.



As noted in the DEA, a Beaufort Sea lease sale would encourage or necessitate additional improperly planned and pre-mature lease sales including federal leasing on the Outer Continental Shelf (OCS). The DEA goes on to state that lease developments of the Beaufort Sea type "would wisely be undertaken only" as part of a comprehensive coastal zone management plan. The passage of the Hammond Administration coastal zone management bill does not appear likely this year.

In the Statement of Position of the State of Alaska before the Federal Power Commission regarding a gasline from Prudhoe Bay, one of the justifications for not supporting the Arctic Gas proposal was that, "As proposed, the "prime" route for the Trans-Canada line would cut through the entire width of the Arctic National Wildlife Range. An intrusion upon an untouched area is irreversible, whatever steps are taken to mitigate its effects, and an intrusion into the Wildlife Range would be a tragedy." (pp. 4-5)

Wildlife populations on the arctic coast will remain viable only as long as there is a place which is left undisturbed which they might inhabit. We are very concerned that a Beaufort Sea lease by the State might lead to pressure to open up the Wildlife Range to development and so destroy the remaining habitat that seabirds and polar bears might be displaced to.

pp. 27-28

Comment: The DEA states that a Beaufort Sea lease sale might bring in revenue as low as "on the order of \$20 million to \$100 million." This is far from a panacea for a potential \$850 million deficit and it is clear that other major steps will be necessary.

D. Beaufort Sea Nearshore: Choices Available

pp. 29-31

Comment: The DEA states that a lease sale could only contribute to solution of the economic "crunch" if it occurred no later than 1976. The DEA concludes that a 1976 lease sale with deferred drilling "would be preferable in terms of environmental risks and social costs." In view of the major problems associated with immediate lease development we would concur that immediate development should not be contemplated. Deferred development would likely depress bidding at a lease sale. It would be better to hold off on a lease sale until such time as development would be wise so that revenue could be maximized.

II. Characterization of the Environment

A. Physiographic and Geologic Characterizations

B. Ecological and Biological Characteristics

pp. 35-230

Comment: This section of the DEA is a general presentation of the very limited baseline data available concerning the Alaskan Arctic coast onshore and offshore geography, physical processes, geologic setting, landscape and vegetation, birds, mammals, fishes, and lower trophic levels. It will not be commented on in detail since that would not be productive and the presentation appears fair other than a few typographical errors (such as Six vice five major river systems on p.40). We are sure that a more complete literature review could have been undertaken if the people compiling the impact assessment had had more time to research these topics more thoroughly.

This section does, however, serve to emphasize the lack of knowledge of the detailed arctic environment in almost every area as well as the inherent fragile character of its ecosystems. The relatively low species diversity of the arctic biota and its inherent instability is well known. There is a paucity of data concerning arctic microbiology, fish overwintering areas and ice movements to name a few areas.

Of special interest is the admission of <sup>N</sup>/ p. 132 that although the major oil companies may have considerable information concerning estimates of reserves in the

proposed lease area "the State of Alaska is not engaged in performing such estimates." The State, not knowing exactly what it would be selling, would be dealing with major oil companies who likely already have a pretty good idea of exactly what they would be buying. That is somewhat akin to trying to beat a stacked deck.

### C. Communities and Camps

pp. 232-235

Comment: This section discusses the Prudhoe Bay-Deadhorse area. The population estimates are, of course, speculative to some degree, however, better information should be available to the State. There are likely well over the estimated 1,500 persons noted in the DEA now at Prudhoe Bay. BP Alaska and ARCO presently have large camps in operation that are being expanded. Pump Station No. One presently has a bed capacity of 450 persons and may expand to 550 persons. There are a number of smaller camps ranging in size from a bed capacity of 4 to several hundred and more are under consideration. The ACGA and Fairbanks North Star Borough Pipeline Impact Information Center (IIC) estimates will likely be reversed, that is around 3300 in 1975 and 5,000 in 1977.

It is well to note that the State is currently funding the Deadhorse airport improvement program at \$4.25 million dollars. Since there is no non-oil associated communities in the Prudhoe Bay area this is a State provided service to the oil companies.

The statement is also made that, since "all surface land in the area is owned by the State of Alaska", the State can guide development "through lease and concession agreements to minimize health and environmental problems." That would also be true of development to date which, unfortunately, has not been conducted in accordance with minimum requirements of either law or lease as will be discussed later in these comments with regard to page 360.

pp. 237-239

Comment: This section discusses the North Slope Borough which, other than the Prudhoe Bay pipeline-corridor anomaly, is not yet closely tied to energy extraction activity. Persons traveling to or from Barrow via Fairbanks on Weir Air Alaska, however, must compete with Prudhoe Bay passengers for space and accept the inconvenience and delay of a stop at Deadhorse.

There have been adverse impacts to residents of Anaktuvak Pass (largely from the old Hickel Highway) and other interference with subsistence activities of a limited number of north slope natives may be occurring related to the Alyeska project. If the pipeline proves to be deleterious to caribou herds the impact may be more noticeable.

pp. 240-246

Comment: Fairbanks has been adversely impacted by the Alyeska pipeline project to a much greater degree than is indicated by this section. Serious impacts would be expected in a city which has more than doubled its population in less than five years.

Monthly reports by the IIC and almost daily newspaper articles have chronicled the impact. Some of these are listed below for example.

1. Severe child neglect and abuse cases were up 178.8% and total child welfare case load were up 84.5% in August 1974 compared to August 1973 (IIC Report No. 8).

2. Fairbanks ranks No. 1 overall on the FBI list of the top 50 metropolitan area crime centers in the nation for 1974 (based on a statistical index of homicide, rape, robbery, burglary, assault, larceny, and auto theft). Crime increased 24% in 1974 in Fairbanks. The Fairbanks Police Department (FPD) has an authorized strength of 50 commissioned officers but has 13 vacancies due to resignations. 11 men have left the (FPD) to accept pipeline jobs (Fairbanks Daily News-Miner 13 May 1975).

3. Housing in Fairbanks is critically short. There is reportedly a 0% vacancy rate and a 103% occupancy rate (IIC Report No. 15). Tents are advertised in the unfurnished apartments column of the newspaper and are reportedly selling well. The supervisor of the Alaska Department of Health and Social Services Environmental Health Office in Fairbanks is seriously concerned about the potential of an epidemic related to poor sanitation in whatever housing is set up for the expected additional influx of pipeline job seekers this summer. Governor Hammond recently established a Fairbanks Rent Review Board.

4. In 1974 the Fairbanks Memorial Hospital average bed occupancy of 67.7%. 28 beds were added in November to increase capacity by 32% to 116 beds. The occupancy rate in February 1975 exceeded 80%, which is the level past which functioning effectiveness decreases.

The total number of gonorrhea tests administered by the Fairbanks Health Center in 1974 increased 27.5% over 1973 although positive results only increased 4.8% (IIC Report No. 10).

6. Divorce complaints in Fairbanks for the period January to October 1974 exceeded that of the similar 1973 period by 14.8%. For October 74 compared to October 1973 the increase was 23.9% (IIC Report No. 9).

In contrast to the above, the DEA only indicates "some stress on housing and community services." The DEA indicates that the "Fairbanks financial situation is very strong" and predicts that supply will catch up with demand by 1980. pp. 247-250

Comment: The DEA is equally over optimistic concerning Anchorage. The DEA states that the "Anchorage area had 'over-built' prior to the population influx. A 12% vacancy rate "a year ago" and a current vacancy rate of 3-5% are given. The DEA forecasts no significant problems for Anchorage.

Because of its size it would be expected that Anchorage could handle impact better than Fairbanks. However, the lack of advance planning there is also apparent. The housing vacancy rate was noted to be less than 1% when the Anchorage Borough Assembly voted 9-2 to request establishment of a rent control review board. A 0% rate was forecast by the summer (Anchorage Daily News, 13 and 14 May 1975).

The Anchorage Borough planning department issued its 1975 pipeline impact report on 12 May. This report stated that "The economy is booming at the expense of change in the quality of life in the Anchorage area." The reports indicates that taxes will increase to simply maintain services for the increasing population ( up 13% in 1 1/2 years). New unemployment claims are up nearly threefold, inflation is up, crime is up drastically, consumer and pipeline priorities are competing for existing transportation services (undoubtedly contributing to the increased inflation rate), vehicle registration is up 24%, and carbon monoxide air pollution has increased markedly to levels known to be adverse to human health ( an old problem in Fairbanks).

### III Description of Proposed Action - Industry Activities

#### A. Exploration Phase

pp. 255-265

Comment: Geophysical survey action is briefly discussed in this section. Although such aspects as crew manning levels and wages are discussed no real assessment of seismic crew impact is presented. Figure 3 indicates the Beaufort Sea lease sale was announced in mid-1974 for March 1976. Figure 4 indicates an immediate increase in ice seismic crew activity peaking in the winter of 75-76 with 12 crews even though it is stated that 11 to 18 months lead time is necessary to mobilize a seismic crew. Apparently major Beaufort Sea seismic work was conducted in the February to April 1975 season and that impact has already occurred (10 or more crews).

Water seismic work is noted to be scheduled also. The DEA states that the oil companies are ready for a Beaufort Sea area lease sale even though there

is some indication they may not have a large enough geophysical staff to interpret the seismic data in a timely manner. This is a confusing statement. This information would indicate that sufficient seismic information could not be gathered and evaluated to support a lease sale until late 1976.

pp. 266-271

Comment: The possible movement methods for drill rigs and types of rigs is generally discussed in this section. Specifics are not dealt with and no analysis of impacts of movement is attempted.

pp. 271-272

Comment: The assumption is made that main camps at Prudhoe Bay are "well designed" facilities. This, unfortunately is not true in all respects as will be discussed in more detail with regard to page 360. Development of facilities at Prudhoe Bay has been notably lacking in overall planning of long range needs. A series of poorly designed small camps has proliferated, particularly in the Deadhorse industrial park.

Even the better planned ARCO and BP facilities were not properly designed in all respects and consideration of ultimate expansion needs was not evident in the initial installations. No information is provided concerning the "remote" exploratory camps.

pp. 272-273

Comment: Drilling techniques used on land at Prudhoe Bay or offshore in warm climates may not necessarily apply in the Beaufort Sea. Drill rig movement and placement will be effected by the ice and simple insulation of gathering lines will not suffice if they are buried in ice rich permafrost.

pp. 277-286

Comment: Drilling hazards including blowouts and safety systems are discussed in general terms. The potential problems of gas hydrates is mentioned but solutions are not discussed. Five natural gas blowouts (fire in two cases) in Alaska are listed. The causes of these are not discussed. In view of the supposedly adequate blowout prevention systems how did these occur? Blowouts will be discussed in greater detail with regard to page 451.

pp. 287-288

Comment: A spill prevention control and countermeasure plan (SPCC) is required not only if a spill has occurred in the past, but also if it "could reasonably be expected" to occur (in excess of 1000 gallons or in "harmful quantities" "into or upon the navigable waters of the U.S. or adjoining shorelines").

The Alaska Oil and Gas Association (AOGA) statement quoted may be good public relations for the industry, but minimizes the serious problem for which good answers do not yet exist. It is difficult to understand why it was quoted here. First of all, the probability of a large or major spill may be small, however, they seem to occur with distressing regularity. The State has some of the figures on this (incomplete since not all oil spills are reported and those that are reported may often be underestimated in size) for the Alyeska pipeline project. Multi-thousand gallon oil spills have become quite "routine." An oil spill contingency plan is required by law in many cases, not simply an act of good faith by industry.

Oil spill containment and cleanup measures would be difficult at best in the cold waters of the Beaufort Sea or on ice and snow. The frequent adverse weather conditions of the area could further complicate any cleanup attempts. Technology does not currently exist to contain or cleanup an under ice spill or blowout. The mechanisms for dissipation and weathering of spilled oil in the Beaufort Sea may be extremely slow if operative due to the cold temperatures and as a result of under ice conditions. The adverse biological impact would be expected to be severe on a relatively "clean" environment already under stress.

Studies such as the Canadian Beaufort Sea Project are just now getting under way and to date have only served to identify the problem, not its solution. Clean up procedures on actual spills in snow and ice conditions on the Alyeska pipeline project and the Lakehead pipeline system have provided evidence that contingency plans and cleanup measures are far from optimum.

pp. 288-291

Comment: The hypothetical schedule with initial production 7-8 years after a lease sale seems unduly retarded if industry is really ready now and places a high priority on the Beaufort Sea, as has already been stated in the DEA.

pp. 291-300

The type of drilling platform is an important question. Figure 15 illustrates a method of construction of an artificial island. If composed entirely of gravel some 19 million cubic yards would be required. A gravel perimeter and sand mud core option is also discussed which would reduce gravel requirements. The source of sand and mud is not discussed. Either option would require rock protective slope covering. The difficulty of procuring such material is briefly mentioned. 5 feet of free board above sea level is provided to cope with storm waves and ice. That may be insufficient. No meteorological or ice data is presented to support that conclusion. Storms have caused water level increases as much as 2 meters (6 1/2 ft) in areas of the Beaufort Sea and resulted in substantial beach erosion (Canadian Department of Public Works, (1970), Investigation of storm September 13-16, 1970, Mackenzie Delta region, Beaufort Sea.) Although meteorological data is sparse the probability of 4 to 6 meter (13-19 1/2 ft) <sup>WAVES</sup> may be relatively high.

Structures in the nearshore "shear zone" will have to withstand ice exerted pressure. "Adequate information on this subject is simply not available." Ice failing around the structure may result in pressure ridges which "can develop and engulf the structure." (NSF, p.6). Artificial islands in the nearshore zone could have adverse effects on buildup and circulation which could require a great deal of coordinated planning to overcome. Failure to do so could be very costly to industry and the environment. This problem is not mentioned in the DEA.

How will these "islands" be constructed so that they will be destroyed by storm-generated sea waves and ice if the exploratory well is a dry hole? What efforts will be made to return areas to a near natural state once the islands are abandoned?

pp. 302-309

Comment: The DEA mentions that transport of material from points outside of Alaska (Alaska is on the same continent as the rest of the US) is "of particular concern" but fails to carry the discussion further. It is likely that consumer prices are rising and that consumer goods shortages have and will continue to occur in Alaska because of competition with the Alyeska project for limited transportation services, as mentioned in the Anchorage Borough 1971 pipeline impact report. Barge services have been pre-empted in the past by Alyeska and may be in the future by other oil developments. Use of the Alaska Railroad to Fairbanks may be another example of government subsidy to the oil companies since it is a federal service.

Who will maintain the highway from Valdez to Prudhoe Bay for Beaufort Sea development? It appears now that deterioration of the State's Richardson Highway has been accelerated by pipeline related truck traffic it was not designed to handle. It was recently estimated that the cost of reconstruction of the Richardson Highway to alleviate damage to date will be \$23 million and it is a logical assumption that this is just the beginning (All Alaska Weekly, 16, May 1975, p.2). Maintenance costs for the Yukon River to Prudhoe Bay road may be too expensive for the State to accept whenever the road is turned over. Alyeska recently let a contract for maintenance on it in the amount of \$14 million.

Additional roads along the coasts west and east of Prudhoe Bay may open up

other areas for development such as the Arctic Wildlife Refuge.

The need for additional airstrips is unclear and should not be based on the density of airstrips around the Prudhoe Bay area which were not subject to coordinated planning and tended to proliferate beyond real needs. Construction of roads and airstrips should only be the result of comprehensive planning. These facilities also require the use of large quantities of gravel.

P. 310

Comment: The ARCO topping plant at Prudhoe Bay is already insufficient to meet demands for fuel placed on it by the current level of construction. Fuel was critically short at pipeline camps north of the Yukon River last fall and may have been a contributing factor to construction falling behind schedule. The quality of gasoline produced makes ARCO the butt of jokes in the area and likely accelerates equipment engine wear. Construction of additional refining capacity would be another major impact. If such capacity was to be added planning should consider long-term needs for the area including pipeline construction.

B. Development Phase

PP. 312-320

Comment: Hypothetical field development is discussed. This time solid gravel artificial islands are assumed. Gravel requirements would be large scale in the 30 foot depths discussed. Further discussion of gravel will be made with regard to page 408. Cofferdam and bridge pier construction for deeper water sites is mentioned (comments with regard to pp. 291-300 apply). The burial of insulated hot oil pipelines under the seafloor to the mainland is mentioned on p. 318. Apparently this portion of the DEA was written without due consideration of permafrost degradation. Insulation may slow but will not alleviate degradation. How would such a pipeline be supported if it passed through permafrost consisting of fine grained ice rich materials with ice wedges present?

How will the State assure unitized operation of the lease if as many as ten owners are involved, other than by showing "preference" or "assuming"?

p. 326

Comment: What is the basis for assuming a field producing rate of 222,000 barrels/day? On page 132 it is indicated that the State has not made an estimate of field reserves or presumably production capability.

p. 326

Comment: Is an elevated hot-oil pipeline 20 feet in diameter really proposed or is that a misprint? What will be the impact of the feeder pipelines with lengths totalling over one hundred miles? Is hydrological data available for the one to four major river crossings?

pp. 329-331

Comment: Use of the Alyeska pipeline appears to be marginal or at least questionable. If its optimum design capacity is 2.0-2.1 million bpd and this will be taken by fields already under development (if design capacity is actually achieved) it may not be economically justifiable to consider such a major addition as two more pumping stations and "looping" one section south of the Brooks Range. Specifications for the "looping" are not presented. What size line would be used over what section and how and where would the pumping stations be added. It might be better to wait until Prudhoe Bay reserves decline by the 1985 indicated time frame.

pp. 332-335

Comment: The assumption is made that Beaufort Sea produced gas will be handled with Prudhoe Bay produced gas in a common pipeline. Have planners for the proposed gas pipelines considered this additional gas? How will the State obtain its royalties gas for the intra-state use once it enters an interstate pipeline?

IV Analysis of the Effects of the Proposed Action

A. Economic Effects

1. Lease and Production Revenues.

pp. 343-347

Comment: Estimates of lease revenues are subject to wide variation (Comments with regard to pp. 27-28 and p. 132 apply). As was pointed out at the Dept. of Interior

hearings on OCS oil and gas development held in February, since there is so much acreage being offered for lease in the next five years it is doubtful whether there is enough capital available to insure that a good price will be gotten for each lease. The area under question shows good potential for oil and gas, but so does a good share of the acreage the Federal government is planning to lease this year, including 1 1/2 million acres in the Gulf of Alaska. Many of these areas will require a lot less capital to develop and ship to market than the Beaufort Sea reserves. A Federal lease off the coast of Texas earlier this year produced some of the lowest bids in history, many of which had to be rejected. From all these indicators it would seem logical to assume that the State will not receive as much as it would like from a sale in the Beaufort Sea, and should keep this fact in mind when it makes the decisions whether to go ahead with the lease sale.

The Federal government usually assumes that in order to lease 200,000 acres they have to offer twice as much for sale. What makes the state think that it will be able to sale 100% of the acreage it offers for sale. This hypothesis should be questioned especially hard since the oil companies know more about where the good reserves are likely to be, and in this year when so much acreage is being offered for sale the oil companies are probably less likely to pay high prices for questionable acreage. It is very important for the state to figure just how much it can get from a sale, for the costs could outweigh the benefits if their projections prove to be way off. The hypothesis given in the impact statement doesn't seem to be based on very close inspection or else such nice figures as 3/4 and 100% would not have been used.

Completely missing in the economic effects analysis is any meaningful assessment of the potentially major impact on state and local government spending. Increased revenues may disappear in increased spending to provide services to the developing population centers. Using the Figure 5 assumption of a maximum population increase of 17,700 and extrapolating from Mr. Kevin Waring's ( Director of Alaska's Division of Community Planning) testimony at the OCS hearings in Anchorage on 3 February 1975, public development costs might exceed \$630 million. Of course, this figure could be considerable lower if additional services are simply not provided and the increased population is jammed into existing, already overcrowded, urban areas. Further decreases in the quality of life in Alaska would then be forthcoming.

## 2. Property Tax and Income Tax Revenues

pp. 347-352

The property taxes received from developments in the Beaufort Sea might, if the State is lucky, pay for what the State has to put out to subsidize that development in terms of road construction, construction surveillance, airport construction and maintenance, ect.

Employment estimates on page 349 do not match those on page 364.

In the CEQ study on the Gulf of Alaska development they assumed 90 men per rig.

## B. Community Effects

### 1. Past Impact of North Slope Development

pp. 352-362

Comment: The table on page 354 indicates that the employment level of state and local governments nearly doubled between 1966 and 1973 (85% increase) whereas total population only increased 16%. The major portion of increased government employment was after the Prudhoe Bay lease slae. This may be some indication of the increased government spending resulting from the lease sale.

Quote p. 360:" In fact, many communities complained that impacts associated with prudhoe Bay and the trans-Alaska pipelines had failed to materialize."

Comment: Who complained when and about what? The only impact that I can think of which failed to materialize was that not as many school age children moved

into the community as was projected. The number of impacts that did materialize which no one expected, or at least didn't plan for are many. The DEA is detailing their period between 1966-1973, prior to the major impacts that commenced in 1974. Comment: The DEA correctly states that the development of support facilities on State owned land at Prudhoe Bay "was not planned and managed in a coordinated manner" and that this has resulted in manifold problems.

Waste disposal problems are mentioned in particular. The DEA blames these problems on the failure to write special provisions for waste disposal into the original non-oil and gas lease agreements. The DEA states that as a result "these facilities are not functioning properly and negotiations to install a community wide system are at a standstill." The DEA then states that these and other "difficulties" can be avoided "through the careful drafting of future non-oil and gas lease agreements." If the above statements contained in the DEA were true they would still not be a valid excuse for industry not to have complied with appropriate laws of the State.

However, the plain fact is that 1) Both the State and industry failed to accept the planning role which was necessary, 2) Industry failed to comply with laws (11 AAC 58.690.) or general and special lease stipulations administered by the Department of Health and Welfare and later by the Department of Environmental Conservation and 3) These state agencies failed to enforce either existing laws or lease stipulations. This situation is still going on today.

Typical of the lease special stipulations would be that of lease ADL 47157 issued to Burgess Construction Company in 1970 which specified that the "Leasee will be required to comply with all State laws, especially those pertaining to health standards including, but not limited to, water and waste disposal systems." By law all waste disposal facilities were required to be reviewed by the State prior to construction. Permits are also required prior to discharge. The reviews didn't occur but the discharges did. For example, Atwood's camp at Deadhorse discharged raw sewage to a lagoon on the tundra even though state law requires a minimum of secondary treatment. Where threatment is provided it is usually so poor that efficiency is nowhere near secondary treatment standards.

## 2. Impact of Proposed Action pp. 362-391

Comment: The impact on cross-State highways of the Alyeska project would have to be more than "no discernible change" if deterioration of the Richardson Highway, mentioned with regard to pp 302-309, has resulted from it. Anyone driving the Richardson or Elliot Highways could testify to that fact. The Denali Citizens Council has noted the adverse effect of Alyeska related truck traffic past Mt. McKinley Park. The DEA does not discuss the impact of increased road usage in terms of maintenance, accidents (with fatalities, injuries, and equipment damage), or decreased availability of transportation services for consumer use.

The DEA mentions the potential manifold impact of availability of the Yukon River to Prudhoe Bay road without providing any analysis.

One factor totally missing from your analysis is OCS developments in other parts of the State. These developments will require basically the same type of personnel as Beaufort Sea developments. How many people currently in the State have these type of skills will determine whether the people working on the Beaufort Sea development will be newcomers to the State or people left after the construction of the pipeline.

If the State is going to justify leasing in the Beaufort Sea because it will minimize the impacts of layoffs due to the completion of the trans-Alaska pipeline, then it should be promoting the Federal government's lease schedule as well. After all why should we have all the impact in one area?

Probably the best testimony given at the OCS hearings in February was that



presented by Kevin Waring of the Department of Community and Regional Affairs. One of the points Kevin brought up was that the Federal Government was very inconsistent in first proposing that large sections of the State be put under park or refuge status, and then proposing to lease large areas of the OCS. I find it even more inconsistent for the State to ask the Federal government to delay leasing in Alaska because the State is suffering the impacts of the pipeline construction, because not enough is known about the areas to be leased, and because it would cost the State a lot of money to support such developments, and then have the State turn around and lease in the Beaufort Sea where the impacts of pipeline construction are most prevalent, where very little is known about ice forces, or the biology of the area, and suddenly "the absolute employment demands and unemployment generated by the present Beaufort Sea scenarios are within the ability of Alaska's economy to absorb."

The most serious impact of this lease sale may not come from the lease itself, but from the precedent it sets. If the State goes ahead and leases this area then it has probably lost all chances of delaying Federal developments in other parts of the state - developments which may have far more serious impacts than the one currently proposed.

People within the State government have commented that if one has to lease to raise revenues, then the Beaufort is the place where the least environmental impact will occur. If the lease sale is viewed by itself this may be true. However, the Federal government is in the process of funding several multi-million dollar research programs for the Beaufort and Chukchi Seas which will give them the technical knowhow to develop the three mile limit in the next five to ten years. As is mentioned in the DEA, experience developed at the current lease location will enable these developments to occur at an earlier date. Just because there is the technical knowhow to develop in areas covered by ice a good part of the year doesn't mean that such developments are environmentally safe. I shudder to think what the impacts of large scale oil and gas developments in the Beaufort Sea will be in light of some of the current projections of the impacts of large scale oil spills on melting of ice.

One of the side-effects of a Beaufort Sea lease may be the speed-up of the need for a second hot oil pipeline, or the development of some other method for getting the oil to market. 500,000 barrels a day of oil is roughly half the capacity of the current pipeline under construction. At a recent meeting of the National Academy of Sciences polar research advisory committee the use of ice-breaker tankers to transport oil was discussed. Scientists attending the meeting claimed that current inflations has made the use of ice breaker tankers economically feasible and that the technology and scientific knowledge exists to use such tankers.

The DEA presents a Prudhoe Bay population range estimate from as low as 5,000 to as high as 15,000 and correctly states that support of such a community is clearly "beyond the scope of the present industry and State agency efforts." Also presented in the DEA is the situation of the North Slope Borough having areawide powers to provide services without an adequate tax base. That the North Slope Borough, composed primarily of subsistence based native communities lacking many of the services listed on p. 382 and without sufficient taxing authority, should be called on to provide these services to the oil industry is ludicrous at best.

It cannot be in the long-term best interests of the State to allow continued unchecked, unplanned, and improper growth in the Prudhoe Bay area. The State has the power via simple enforcement of existing laws to limit growth to the minimum necessary for prudent carefully planned operations. Establishment of a large temporary community would accentuate the eventual "boom-bust" effect when

activity declines to field pumping and upkeep operations.

#### Community Effects

Comment: At such time as a decision is to be made as to whether Prudhoe Bay is to become a permanent settlement, we hope that the State will issue an impact statement on that question alone. The impacts of a permanent community in an area as delicate as the North Slope could be substantial.

Statement: "The basic question involved is not whether the State should encourage development in the Beaufort Sea versus Lower Cook Inlet, but given the likelihood that resource development will continue in Alaska's offshore and upland areas, how locational and timing priorities should be developed to maximize Alaska's benefits (or, at least, to minimize the potential negative impacts)."

Comment: We hope that the State considers more than when the best time is to make a certain piece of Alaska open to the market so as to get the best price. There may be certain areas of the coast which should not be open to development because the resources found there are more valuable than oil, or because to develop there could have catastrophic consequences. To date the State has done just what the quote says is not the basic question. The State has said that it is not okay for the Federal government to develop in Bristol Bay because of the fisheries resources found there, but it is okay to develop in the Beaufort Sea because there aren't such resources. It is okay for the State to lease for revenue, but it is not okay for the Federal government to lease to keep the national economy going for a bit longer.

#### Effects on Subsistence Patterns of Local Residents

Comment: The current development will probably only further impact the communities already affected by Prudhoe Bay developments. However, if a permanent community is established at Prudhoe Bay there could be serious impacts on all interior villages. Of special concern is competition over game animals. Keeping the haulroad closed to public traffic will help alleviate some of this pressure which will be increased by any newcomers brought to Fairbanks by oil related development.

All the current proposals for d-2 lands have special provisions for subsistence hunting. The State might be interested in getting together with the Federal government in developing such criteria for who is a subsistence hunter, and how one enforces discriminatory laws.

#### C. Environmental Effects

##### 1. Biological Effects

pp. 391-397

Comment: The DEA correctly points out the fact that knowledge concerning the biota of the Beaufort Sea region "is conspicuously lacking." Also of note is the DEA reference to the low species diversity and therefore relative instability of arctic populations living under cold stressed natural conditions. A good example of this is the Polar Cod (*Boreogadus Sieda*) which is used as a food source during different stages in its lifecycle by different animals. If this important food source is depleted by oil development in the Beaufort, then the other animals which depend on it for food will also be seriously impacted, thus starting a serious chain reaction.

Many species of arctic fauna have long generation times and low reproductive rates. Coastlines and inshore lagoons are often important habitat and will be directly impacted by oil development. The biota of the Beaufort Sea may be extremely sensitive to environmental changes associated with oil development.

pp. 398-403

Comment: Articles appearing in the press have portrayed the Governor as stating that there are no serious environmental dangers associated with development in the Beaufort Sea. The following list of potential impacts on bird populations were discussed in the DEA and are relisted here to emphasize that potentially serious impacts to bird populations could come as a result of leasing in the Beaufort.

1. An oil blowout is "more likely in the Arctic because of the reduction of personnel efficiency, the severity of climatic conditions, and the ignorance of geologic formation characteristics." Catastrophic oil spillage would increase

migration mortality and decrease reproductive success for many species.

2. The presence of humans will be a significant disturbing influence on bird populations which can cause mortality. Of particular concern is the influence of noise pollution caused by aircraft, which has been observed to cause birds to leave colonies in panic, and cause eggs to be knocked off of nests.

3. Chronic oil pollution will destroy some bird food sources.

4. Construction on barrier islands and coastline will alter or destroy nesting sites.

5. Pipeline, roads, and structures may hinder bird movements. Drilling rigs act as lethal attractants which can cause significant bird mortalities.

Perhaps the most significant comment that can be made on this section would be to quote Assistant Secretary of the Interior Nathaniel P. Reed when he said on 13 May 1975, "My department's assessment is wholly inadequate. An excellent... analysis of our present inventory of Alaska Marine birds reads like a compendium of ignorance. We do not know the extent to which oil pollution affects seabird populations. We have good reason to fear the worst, especially as we approach arctic climes." PP. 404-406

Comment: The DEA states that "The barrier islands in the study are the most heavily utilized denning areas of the northern Alaska polar bear population." These areas may already have been adversely effected by seismic activity since polar bears are "highly susceptible to disturbance during denning and shortly thereafter."

Polar bears that den in the barrier islands may move between Alaska and Canada (Stirling, I. (1975). Polar bear research in the Beaufort Sea. In: Coast and Shelf Research in the Beaufort Sea, Gunn, W.W. (ed.). Arctic Institute of North America, pp. 719-731). The United States and Canada are both signatories of the 1973 International Agreement on the Conservation of Polar Bears which provides that "each contracting party shall take appropriate action to protect the ecosystems of which polar bears are a part."

The DEA also recognizes that seals, an important component of the arctic ecosystem, would be adversely effected by seismic and drilling operations as well as chronic or catastrophic oil spillage.

Leads in the offshore ice are important centers of activity for seals, whales, polar bears, and birds. Oil spillage entering leads would adversely effect these organisms.

Marine mammals indigenous to the arctic coast (polar bears, seals, whales, etc.) are highly mobile, and if seriously disturbed will probably seek habitats adjacent to the lease area to breed and live in. The important question is, with the mad rush to develop everything at once, will there be any suitable habitat left for them to live in and reproduce? The State cannot assume that they can view their actions out of context with what the Federal government has in mind for oil and gas development in this area. Developments off the shore of Pet 4, and the Arctic Wildlife Range would effectively eliminate any habitat for these already threatened species to be displaced to.

pp. 407-412

Comments: A series of adverse effects on fish populations are listed in the DEA as follows:

1. "Seismic detonations are lethal to local fish populations in shallow water.

2. Gravel extraction "may or may not be harmful to fish," In this regard it is significant to note that a large amount of gravel will be required for Beaufort Sea development, potentially much more than has already been used in the Prudhoe Bay area. Much of the gravel already used has been obtained from nearby streams. Associated adverse impacts on fish are likely including elimination of overwintering sites, destruction of spawning areas, and stream siltation. The impact of gravel extraction on stream hydrology and sediment transport is not yet understood. Despite this lack of important baseline data the Alyeska pipeline project and associated Prudhoe Bay development were allowed. The U.S. Fish and Wildlife Service is about to initiate a four year study to obtain information necessary to evaluate gravel extraction effects and minimize adverse impacts. It would be precipitous to allow further development of this type prior to completion of such studies on a wide range

of impacts.

3. Water quality degradation will adversely effect fish populations and could result from gravel extraction, water supply and wastewater disposal practices, and oil spillage.

An important impact has been the pumping dry of river pockets of water containing overwintering fish populations in the Prudhoe Bay area for drinking water supplies. This impact has resulted in the vacuum of decision making and planning that responsible State agencies have hidden in (see page 413).

Chronic or catastrophic oil spills would have obvious adverse effects on fish via direct toxicity as well as disruption of the lower trophic levels that fish feed on.

As mentioned earlier, fish are a main source of food for other animals found in the Beaufort Sea and adjacent coast. Seabirds, Polar bears, seals, and other animals associated with the coast depend a large part on fish as their food source.

The area proposed to be leased is one of the richest estuaries off the Alaskan arctic coast. It may not be as biologically productive as Bristol Bay, but it is very important in terms of animal populations found along the Beaufort coast. The consequences of disturbing a rare "oasis" like this may be to make a whole area barren desert.

p. 413

Comment: The DEA offers mitigating efforts of the Departments of Fish and Game, Environmental Conservation, and Natural Resources. These agencies are the very ones which have failed to plan, failed to coordinate, and failed to enforce state laws. Based on past performance it is evident that these agencies will not take mitigating measures that might slow down development or cost industry money.

Mr. Champion might have been talking about these collective agencies in his 6 February 1975 report to Governor Hammond when he stated, "The biologists are prepared to accept the fact that construction (of pipeline facilities) may take place at critical times (therefore resulting in adverse impacts to fish populations)..." pp. 416-432

Comment: This section discusses known oil toxicity and other adverse impacts on lower trophic level organisms. Again the lack of data is an important part of this decision. The available data, however, shows a clear pattern of oil toxicity to a wide range of organisms. Toxicity has been demonstrated in large spill situations where acute lethal doses occur and under chronic exposure conditions.

Not only would biodegradation of spilled oil be slower in Arctic waters, as the DEA states, it could be negligible under certain conditions. In one study in waters north of Pt. Barrow "no organisms were found which were able to utilize or disperse oils at summertime arctic temperatures" (Glaeser, J.L. (1971). A discussion of the future oil spill problem in the Arctic. In: Proceedings API/FWCCA Joint Conference on Prevention and Control of Oil Spills, pp. 479-484). Populations of oleoclastic bacteria may be proportional to the degree of pollution and therefore would be naturally low in the Beaufort Sea.

It is generally conceded that recovery from a severe ecological disturbance, such as a major oil spill, would be a lengthy process in the Arctic as a consequence of slow growth, extended life cycles, and longer reproductive periodicity (Chia, F.S. (1970). Reproduction of Arctic marine invertebrates. Mar. Poll. Bull. 1 (NS) (5): pp. 78-79).

p. 438

Comment: Low temperature does not appear to be a major factor in reduction of wastewater treatment plant efficiency (either biological or physical-chemical) as practiced at oil company camps. First of all, fresh water is normally stored in heated buildings and circulated in insulated and heat taped pipes. Wastewater is collected in insulated and heat taped pipes. Wastewater treatment plants are in heated buildings. Although on occasion some camps have treated relatively cold wastewater, the normal wastewater temperature range is on the order of 15° C to 20° C, similar to normal wastewater temperatures in temperate zones. If wastewater temperatures were to be abnormally low the literature indicates that proper design, operation and loading (good principles at any temperature) would enable good treatment of both biological or

physical-chemical treatment plants. For example, evaluation of extended aeration package treatment plants has shown no significant loss of biochemical oxygen demand (BOD) removal efficiency with liquid temperatures in the 3° C to 40° C range (Goodman, B.L. (1966) Packaged sewage treatment plants criteria development, Part I: Extended aeration," National Sanitation Foundation, Ann Arbor).

Although viscosity increases with decreasing temperature which can retard solids separations, this effect appears negligible at high concentrations (Reed, S.C. and Murphy, R.S. (1969) Low temperature activated sludge settling. Journal of the Sanitary Engineering Division, Proceedings of ASCE , 95, No. SA4). The use of appropriately design tube settlers and clarifiers with low overflow rates is recommended. Investigators have found that the primary causes of poor wastewater treatment obtained from package plants in Alaska are overloading, improper operation, and lack of proper sludge wasting. (Clark, S.E. Coutts, H.J., Christianson, C. (1970) Biological waste treatment in the far north. Alaska Water Laboratory Project No. 1610 ---- 06/70, College, p. 16)

pp. 438-441

Comment: An adequate water supply is difficult to obtain during winter conditions at Prudhoe Bay. As noted on page 410 fish overwintering pools in the Sagavanirktok River have been pumped dry with resultant fish kills. The magnitude of this problem increased to serious proportions this winter with large populations working at Prudhoe Bay through the winter for the first time. The availability of a water supply for a large community at Prudhoe Bay cannot be assumed. Although lake water is utilized at certain times of the year it is not always available. Obtaining water may be costly in terms of both the environmental effects and economic factors.

pp. 439-442

Comment: Wastewater treatment at Alyeska pipeline camps and at Prudhoe Bay has not met minimum state standards. This comment is true in all cases since operations first commenced in the area. As already noted, this fact is not a function of temperature. Wastewater treatment systems now in use operate in heated buildings. For example, during monitoring in the winter of 1971-1972 the lowest temperature recorded was 16.5° C at the former BP Alaska base camp now operated by Mukluk Freight Lines (Damron, F.J. (1972) Water/Wastewater Evaluation for an Arctic Alaskan Industrial Camp. MS Thesis, University of Alaska). Although these treatment plants were not designed for the relatively high strength influent wastewater seen at camps, these wastewaters could still be handled using conventional equipment. Certain design modifications could easily be made that would increase treatment capability. The poor treatment that has been seen is largely a result of three factors: 1. Organic and hydraulic overloading of treatment plants 2. poorly trained or untrained operators 3. failure to install necessary treatment equipment.

These conditions are the result of unsatisfactory planning and management on the part of the industry and the State and involve violations of applicable state laws by industry and failure to enforce laws by the State. There are no cases where wastewater treatment plant failures on the Alyeska pipeline project resulted in action by either the Department of Environmental Conservation or the State Pipeline Coordinator's Office to reduce personnel (and thereby reduce treatment plant overloading) or enforce state laws or stipulations. As mention in the DEA, the result has been the discharge of poorly treated or untreated wastewater to the surrounding area. The term raw effluent, used on p. 441, is a misuse of words. What was meant was raw sewage.

The table on p. 440 contains several errors. Some pipeline road construction camps last year had populations as high as 450. Some pipeline camps this year may have populations in excess of 1400. Duration of these camps might better be listed in years rather than months since some will have existed eight years (with radical expansions) by 1978 and all will have existed four years by that time. Pump station

construction camps are unlisted and these camps are designed differently than pipeline camps. Their populations are in the 200-450 range with durations of three to four years expected.

It should be mentioned that the Department of Environmental conservation is not presently enforcing drinking water regulations since it has failed to promulgate any over the last four years. This failure will hopefully be remedied by recent federal legislation. There is no way of knowing whether or not complete compliance with the 1962 USPHS Drinking Water Standards is achieved since the DEC has not required the necessary monitoring.

The minimum required wastewater treatment in the state is secondary, however, the DEC definition of secondary might be less stringent than federal law allows and therefore questionable. Road construction camps (except one) all had biological wastewater treatment and some of the pipeline camps still do.

This table (p.440) is the only place in the DEA where solid waste is mentioned. As with wastewater, industry has failed to comply with the solid waste laws of the State and the State has looked the other way by failing to enforce them. This is particularly true at Prudhoe Bay and has been true on the Alyeska pipeline. Improper solid waste disposal has caused air, land and water pollution at Prudhoe Bay. The location of solid waste landfill sites is particularly critical. Many of Alyeska's were approved after the fact by the DEC. Three are now operating illegally despite DEC disapproval (Commissioner Mueller's letter of 4 March 1975 to Mr. Therrel of Alyeska applies). There is pressure to utilize limited and ecologically important sand dunes areas for landfill sites.

Whereas discharge of properly treated wastewaters to marine waters is likely the best alternative, wherever possible, it is not yet practiced and may be hampered by ice in the nearshore zone.

p. 442

Comment: There is no technical reason why minimum state wastewater standards cannot be met. Rather the reasons are a function of poor planning, poor management and lack of enforcement compounded by politics. For example, although Alyeska has hired qualified consultants (Dames and Moore and Bechtel employ some qualified sanitary engineers) Alyeska has not implemented their recommendations and has not hired a sanitary engineer to come up with anything better. The DEC has failed to enforce state statutes and administrative code regulations and the State Pipeline Coordinator has failed to enforce stipulations which has allowed Alyeska to get away with substandard performance.

The most blatant recent indication of the politically influence of Alyeska is the introduction of Senate Bill 445. Such legislation, if it becomes law, would allow the DEC to waive certain environmental laws at its discretion and "in the public interest" to help Alyeska speed up construction. In effect this would legalize what has and still is occurring, environmental pollution and potential health hazards.

pp. 443-447

Comment: This section indicates that whereas catastrophic oil spills such as major blowouts are probable, chronic spills of smaller volumes will undoubtedly occur and may "be more damaging in the long run to the marine environment." Again there is a lack of data concerning the impact of this pollution as well as other types of discharges such as drilling mud and brine water.

#### 4. Physical Effects

pp. 451-463

Quote: "Many investigators (3-5) have shown that this thin veneer of ice is extremely important in determining the heat exchange between the ocean and atmosphere and have pointed out that, if the ice cover were removed from the Arctic, it might not reform."

" Maykut and Untersteiner have concluded that "modification of the snow or ice surface is the most effective means of large-scale removal... The ideal

material (for spreading on the surface) would be dark, nontoxic, lighter than water, and have a low emissivity." A substance which satisfies a number of these requirements is oil." ( Campbell, W.J., and Martin, S. "Oil and Ice in the Arctic Ocean: Possible Large-Scale Interactions" Science Vol 181, 6 July 1974.)

Comment: The degree of risk and environmental impact accrued due to oil exploration and drilling in the Beaufort Sea cannot be asserted at this time with any certainty. The probable motion of the ice seasonally, the behavior of oil pooling on top of the ice from a spill, the behavior of oil released from a break beneath the ice, the effects of mixing of oil with snow, the relative effects of leads and floes upon the distribution of oil over the surface of the arctic ocean - all of these factors may only be guessed since little hard experimental data exists.

Furthermore, although order of magnitude calculations may be performed to estimate the modification of the albedo of the Arctic Ocean by oil spilled on ice, the climatic models into which such calculations must be inserted are, without exception, merely hypotheses since the problem of climatic change has not been solved. (As a point of reference consider the degree of accuracy of normal National Weather Service forecasts past three and four days in other Polar or temperate Latitudes.) The fact is that no valid evidence to support any of the various models of the effect of the Arctic Ocean on climatic change or ice ages exists.

Any argument of the effects of an oil spill on ice in the Beaufort Sea is merely that- an argument based upon hypothesis or model calculations but certainly not a fact or certainty. Comparitively speaking, the knowledge of the effect of oil on the biological community is extremely solid compared to climatic inferences and very little research has been done in this area.

The DEA clearly states the inability to clean up 1) A winter oil spill forming a "mulch" 2) Oil released below the ice level in the ocean beneath. The inability of oil to spread beneath the ice may indeed be restricted as Hault (1974) suggests or Glaeser (1971), but the strength of these assertions rests not on hard evidence but only, again on inference. Drift rates of ice, at 10 km per day, which are mentioned in the DEA and currents and tides beneath the ice layer in winter which are not directly considered are very significant factors in the ultimate disposition of any oil spill. The DEA justly mentions many of the areas of uncertainty in our knowledge of the results of a Beaufort Sea oil spill.

Of the suggested "mitigating" measures, only the last (#5) faces part of the problem- namely , "A contingency plan should be developed before any offshore drilling has begun in ice covered areas." This is not a mitigating measure at all but a comment which obviates much of the previous statement by acknowledging the inadequacy of present clean up measures. No less adequte is the data base and hard evidence concerning ice dynamics, flow, currents, and oil behavior in the Beaufort Sea. The most reliable comments made in this Alaskan report can deal only with smaller aspects of the problem (e.g. the chemistry of oil on ice) since no larger aspect of the problem is understood.  
pp. 464-466.

Comment: The uncertainties, potential adverse impacts, and lack of information concerning gravel extraction were discussed earlier with regard to pp. 407-412.  
pp. 467-468

Comment: Mining of offshore barrier islands for gravel and sand could have major adverse impacts including destruction of marine bird breeding grounds, destruction of polar bear denning areas, and alteration of the Beaufort Sea sediment transport system. Therefore such activity should be prevented prior to definitive studies and allowed only if these adverse impacts can be avoided.  
pp. 468-469

Comment: Subsea mining of gravel and sand should also be prevented until the effect of such operations on the sediment transport system is understood and it

can be established that unacceptable adverse impacts will not occur.

p. 473

Comment: The State should become involved with the planning of any roads that would extend the existing Prudhoe Bay spine road so that they could serve all purposes and so that adverse impacts would be minimized.

The recommendation against the proliferation of airstrips is a good way which should be backed up by State policy action.

#### CONCLUSION

" The prospect of offshore drilling for oil in the BS presents a serious potential threat to the survival of marine life. Destruction of the marine invertebrate fauna, directly by oil spills or indirectly by such pollutants as PCB's in drilling muds, would effect the survival of those species at the top of the food chain. In the BS these species are the whales (bowhead and white), the seals (bearded and ringed), the polar bear, and, to a lesser degree the arctic fox. Potential regeneration of marine fauna would be slow. The situation is aggravated by the possibility of a blowout while the sea is covered with ice which would likely preclude cleanup operations. If the westerly sea currents carried subice oil masses across the southern BS into Alaska, the extent of the damage to the marine life could be on a scale not yet witnessed by man."

Stirling, I. (1975). Polar bear research in the Beaufort Sea. In: Coast and Shelf Research in the Beaufort Sea. Gunn, W.W. (ed.). Arctic Institute of North America pp.719-731



STATEMENT OF O. G. SIMPSON  
NORTH ALASKA DISTRICT MANAGER  
ATLANTIC RICHFIELD COMPANY  
PUBLIC HEARING ON PROPOSED BEAUFORT SEA  
NEAR SHORE LEASING, ALASKA  
BARROW, ALASKA  
MAY 27, 1975

Lt. Governor Thomas, Commissioners, my name is Glenn Simpson. I am North Alaska District Manager for Atlantic Richfield Company.

Atlantic Richfield Company is enthusiastically in favor of a State of Alaska competitive oil and gas lease sale in the Beaufort Sea at an early date. We are confident that industry has the present technical capabilities, materials, capital, personnel, and desire to explore for and develop the oil and gas potential of the Beaufort Sea near shore area.

Industry's operations in the Prudhoe Bay area, including those of Atlantic Richfield, have demonstrated affirmatively that we can adjust to Arctic conditions and operate in an environmentally sound manner. Moving offshore into the shallow waters of the Beaufort Sea is the next logical step, and we are ready to take that step.

As a major employer of the North Slope community Atlantic Richfield looks forward to long term job opportunities for local residents not only in the Prudhoe Bay Field but also in potential new fields in both the onshore and offshore areas.

We encourage the State to set a firm sale date with specific tract designations as soon as possible to allow for planning by industry and to assure a maximum return to the people of the State of Alaska.

Thank you.

TESTIMONY OF THOMAS NAPAGEAK  
BEAUFORT SEA NEARSHORE PETROLEUM LEASING

Mr. Chairman, Lt. Governor, Gentlemen. My name is Thomas Napageak, I serve as a President of the Village Council of Nuiqsut, I also hold the same title with the Village Corporation. I am sorry to say that I don't have a written statement concerning the whole Beaufort Sea oil lease, however, I would like to testify pertaining to a certain location Union Oil Company had applied for exploratory drilling area, near the main channel of Colville. But first of all, I would like to tell you that there are now industries at Nuiqsut; and the village is mainly a subsistence village with hunting and fishing activities as the main employment of the villagers.

After a considerable time of discussion by both parties (Nuiqsut Village Council and Kuukpik Board of Directors) concerning the proposed work of Union Oil Company, their objections were:

1. the site being too close to the migrating route of white fish, which is the main channel of Colville River;
2. drilling operation starts the same month the small white fish starts coming in, which is on the months of September and October and that the sound of the operation might disturb the migrating fish and greatly effect the livelihood of the village people.

According to the letter, three barges were to be towed and sunk during the ice-free season, which will have to be in the months of July and August. No objections to that, if the drilling operation should start the first of the year, January, 1976, after the fishing season.

RECEIVED

DIVISION OF OIL AND GAS  
ANCHORAGE

TESTIMONY OF THOMAS NAPAGEAK  
BEAUFORT SEA NEARSHORE PETROLEUM LEASING  
Page 2

I want to say that the Village of Nuiqsut does not want to be a blocking stone to development, but that this testimony will help the State in developing the North Slope by communicating with its people.

RECEIVED  
MAY 1971

DIVISION OF OIL AND GAS  
ANCHORAGE

Lt. Governor Thomas, Commissioners, my name is John D. Carr. I am District Landman for the North Alaska District of Atlantic Richfield Company.

Atlantic Richfield Company is enthusiastically in favor of a State of Alaska Competitive Oil and Gas Lease Sale in the Beaufort Sea at an early date. We are confident that industry has the present technical capabilities, materials, capital, personnel, and desire to explore for and develop the oil and gas potential of the Beaufort Sea nearshore area.

Industry's operations in the Prudhoe Bay area, including those of Atlantic Richfield, have demonstrated affirmatively that we can adjust to arctic conditions and operate in an environmentally sound manner. Moving offshore into the shallow waters of the Beaufort Sea is the next logical step, and we are ready to take that step. In addition to onshore experience, we will rely on information gained from Canadian operations in the Beaufort Sea. Further, Atlantic Richfield has conducted and supported various research projects directed toward future arctic offshore operations. In this connection, the University of Alaska and other state agencies have supplied some very capable scientists and engineers as research investigators. We look forward to continued liaison with these groups as industry moves into Beaufort Sea operations.

As a major employer in Alaska, Atlantic Richfield looks forward to long term job opportunities for Alaskans and a continued high level of economic activity generated not only by the Prudhoe Bay Field but also by potential new fields in both the onshore and offshore areas.

We urge you not to issue leases which would restrict or prohibit exploratory or development operations during any portion of the ten (10) year primary term. Any such restriction would materially reduce the real value of such leases and could impair the opportunity for orderly development. Ten (10) years is not an inordinately long time period for exploration and development of oil and gas leases in the arctic. As you know, the onshore leases covering the majority of the reserves in Prudhoe Bay Field were issued pursuant to the 14th State Competitive Oil and Gas Lease Sale held July 14, 1965.

We encourage the state to set a firm sale date with specific tract designations as soon as possible to allow for planning by industry and to assure a maximum return to the people of the State of Alaska.

Thank you.

UNIVERSITY OF ALASKA

RECEIVED  
JUN 04 1975  
Joseph A. Dygas  
P.O. Box 611  
Fairbanks, Alaska 99701  
DIVISION OF OIL AND GAS  
ANCHORAGE

June 1, 1975  
DEPARTMENT OF  
NATURAL RESOURCES

WGS  
Guy R. Martin, Commissioner of Natural Resources  
Department of Natural Resources  
State of Alaska  
Juneau, Alaska

JUN 2 1975

Re: Hearings of Alaska Department of Natural Resources on Possible  
Oil and Gas Lease Sales in the Beaufort Island Area on May 28, 1975  
in Fairbanks, Alaska

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JUNEAU, ALASKA

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Dear Commissioner:

The following represents my own personal opinion in response to statements made by various individuals at the Public Hearings concerning the status of the barrier islands along the Beaufort Sea Coast of Alaska, and some further comments of my own on the nature of nearshore current patterns. Before discussing these particular topics, I will give you my general reaction to what I heard at the Hearings. There seemed to be an absence of people or interest groups at the Hearings concerned with balancing selective development with adequate environmental safeguards. In addition there seemed to be quite some controversy concerning the status of scientific knowledge of the Beaufort Sea Coast and Shelf of Alaska. The problem as I see it is not so much the description of the Arctic coastal environment, but determining those natural resources in the environment, which can expect to be most severely impacted by expanding industrial development and construction. Identification of the primary environmental problem areas is a necessity before the means of safeguarding them can be determined.

On the Question of the Physical Status of the Beaufort Sea Barrier Islands

The Beaufort Sea Coast of Alaska and many of its barrier islands are subject to both the effects of coastal permafrost erosion as a result of summer thawing of beach cliffs and river banks, and coastal erosion induced by the effects of storm surges, waves and currents according to a number of studies including Dygas et al. (1972, 1974 and 1975), Short, Coleman and

Wright (1974), Lewellen (1972), Wiseman et al. (1973), Hume and Schalk (1964 and 1967) and most recently, Arctic Institute of North America's publication of a Symposium on Beaufort Sea Coastal and Shelf Research (1974). Storm induced rates of island erosion may be considerable in local areas; ie., approximately 40 m/yr westward movement of Pingok Island according to Dygas et al. (1972) and Wiseman et al. (1973). On a long term basis, at least over the past few decades, the movement of river discharged sediment, particularly from the Colville River, and sediment eroded from the coast and islands is towards the west at varying rates. This does not mean that examples of deposition and shoaling can not be found. According to local Eskimos of the area, particularly the family living at Beechey Point, there has been significant shoaling of Gwyder Bay over their lifetime to a sufficient degree to prevent the passage of small boats through the area. In view of the general tendency for coastal erosion along the Beaufort Sea Coast of Alaska and parts of the Canadian Arctic as well, I do not recommend in my own opinion, the use of the Beaufort Sea Coastal Barrier Islands as a general source of gravel for construction purposes because of the increased probability of further acceleration of erosional processes.

On Nearshore Current Patterns along the Beaufort Sea Coast of Alaska

Recent research by Dygas (1974 and 1975) on current patterns along the Simpson Lagoon Coast between the Colville River and Prudhoe Bay suggests that although there is a net westward transport of water at speeds as great as 45 cm/sec (1.6 knots), there is a predictable periodic reversal of the direction of movement of wind drift currents .

Approximately every 4 - 5 days, the predominantly east to west moving currents changes their sense of direction to west to east. An understanding of these reversible nearshore current patterns in association with periodic shifts in the prevailing wind patterns along the Beaufort Sea coast is

important to environmental monitoring and prediction of the rates and directions of movement of possible future spills of either soluble or suspended contaminants in shallow nearshore water along the Beaufort Sea Coast of Alaska.

I have discussed briefly and I hope understandably two particular topics on which I have had personal knowledge and in response to the often heard statement during the Public Hearings that a ' dearth of knowledge exists about the Beaufort Sea Coastal Environment...' . I am not implying by any means that a complete scientific understanding of this coastal environment has been attained, but a start has been made and as time goes on the fund of knowledge will grow considerably. It is the wise use of the knowledge that is available in the near future on this Arctic environment by our State that is of concern to some of the residents of the State of Alaska.

Sincerely,

A handwritten signature in cursive script, reading "Joseph A. Pygar". The signature is written in dark ink and is positioned below the typed name "Pygar".



# UNIVERSITY OF ALASKA

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Box 80828  
College, Alaska 99708  
May 28, 1975

*WES*  
Mr. Guy Martin  
Commissioner  
Alaska Dept. of Natural Resources  
Juneau, Alaska 99801

Dear Mr. Martin:

Enclosed is my written testimony which I presented at the  
Beaufort Sea lease sale hearing held at Alaskaland, May 28, 1975.

Please include this testimony in the written record which you  
said would be remaining open until June 15.

I was not intending to testify, as I stated verbally, but as the  
hearing progressed, I felt there were a number of points that needed  
clarifying. Feeling a personal commitment to the welfare of the  
aquatic resources in the proposed lease area, I felt it was important  
for me to testify spontaneously. I hope that what I said will be  
in the best interest of the resource involved and especially hope that  
it will assist you in your very important decision.

Yours sincerely,

*Richard A. Furniss*  
Richard A. Furniss

DEPARTMENT OF  
NATURAL RESOURCES

JUN 2 1975

RECEIVED  
JUNEAU, ALASKA

My name is Richard A. Furniss. I live in Fairbanks, Alaska. I am employed by the Alaska Department of Fish and Game, Sport Fish Division. My title is Arctic District Fishery Biologist.

Let me qualify this testimony today by saying that I am testifying as a private citizen, not as a state employee. I must point out that what I say may not reflect or be consistent with state policy or the policies and opinions of my employer.

In my job for the state, I am responsible for managing fishery resources north of the Brooks Range of mountains, an area of approximately 85,000 square miles and nearly equal to an area the size of the state of Idaho.

During the past two years I have been involved in aquatic resource studies within the present trans-Alaska oil pipeline corridor. This work has included completion of a char life history study. In addition, I have been assigned as special study project leader for the Joint Fish and Wildlife Advisory Team (part of the Joint Federal/State pipeline construction surveillance organization). This study was directed at overwintering of fish in the Sagavanirktok River drainage as related to removal of water for petroleum development.

I have also conducted basic biological surveys of aquatic resources across most of the Arctic North Slope region, including biological assessments of the various gas pipeline routing proposals.

During two separate weeks last summer I headed a study of fishery resources in the estuarine environment of Prudhoe Bay. Eight netting sites were established at various locations to determine species composition, migration patterns, and other factors. This work was supported by Atlantic Richfield Company because it was specifically directed to evaluating the impact of ARCO's construction of a marine causeway in that area upon the fishery resource. Reports of this work are available through Dr. Paul Falls, Atlantic Richfield Company, Box 360, Anchorage, Alaska 99510.

In addition to this work I have participated in the oil pipeline construction surveillance, advising construction engineers of biological considerations and cooperating closely with them to minimize construction impacts on the aquatic resources of the pipeline corridor.

In summary, I am one of the few aquatic biologists who have studied the aquatic resources of the proposed Beaufort Sea petroleum lease area. I am familiar with most of the recent literature pertaining to this area.

I was requested by Mr. John Palmes of the Habitat Protection Section of the Alaska Department of Fish and Game in Juneau to prepare a draft statement of fishery resource knowledge in the Beaufort Sea. My statement appears nearly word-for-word in the two sections discussing fisheries which are published in: Draft Environmental Assessment, Proposed Beaufort Sea Nearshore Petroleum Leasing, Office of the Governor, Division of Policy Development and Planning, April 4, 1975.

Earlier in this hearing Dr. Max Brewer has taken exception to the Draft Environmental Assessment's conclusion that knowledge is conspicuously lacking for the Beaufort Sea region. Dr. Brewer testified that knowledge of the Beaufort Sea is indeed available, although much of it is in obscure publications difficult to locate. He provided you with additions to the bibliography found in the Draft Environmental Assessment. It is true that much literature was not included in the Draft Environmental Assessment. In drafting the Environmental Assessment I was given about two weeks prior to the March 1 deadline to prepare detailed statements. This necessitated a high degree of reliance on my own personal knowledge of the resource in the lease area and on literature in my own library or at least easily accessible. Thus, some obscure literature was left out. And I imagine this was true for other contributors. I am pleased to see additional data has been provided by Dr. Brewer. However, he has led you to believe that sufficient published literature exists today concerning the Arctic, which we can use at this time to properly regulate oil development in the Beaufort Sea. He infers that no additional research is needed to properly insure environmental protection. This is not correct. I must agree with the Draft Environmental Assessment--biological data is lacking for the Beaufort Sea lease area.

In my field of expertise, arctic aquatic resources, research has been minimal, particularly as it relates to petroleum development. For instance, my study of Prudhoe Bay Fish resources in the summer of 1974 was the first detailed fisheries work of any type in the marine environment of Prudhoe Bay. This fact is utterly amazing in view of the great ecological concern on the part of environmentalists who questioned the ecological desirability of oil development in that region and who blocked pipeline construction with the hope of obtaining further biological data so that development could be done in an environmentally sound manner. There has been no great rush to complete aquatic research in Alaska's far North. My point is--today there is little knowledge of the Beaufort Sea aquatic resources. I feel strongly that the state's Draft Environmental Assessment is an excellent summary of the most significant literature relating to the aquatic environment and the conclusion in that draft that "information...is conspicuously lacking" (as stated on pages 391-92) is a valid statement concerning my field of expertise. At this time we do not have sufficient aquatic resource knowledge of the proposed Beaufort Sea lease area to adequately safeguard those resources.

Thus, the question now is not a matter of development or not, but a matter of when. In the lease area, as a biologist, I am concerned with the protection of biological resources, large and small, economically valuable or not. Facing the reality that our Beaufort Sea petroleum resource will be developed, our only approach now is to do it properly. There is no question that further aquatic research is necessary in the lease area. I have recently been involved in drafting a study proposal for aquatic research in the Beaufort Sea near-shore environment of the proposed lease area which was accepted and funded by the federal government under the Outer Continental Shelf (OCS) study funds. There are plans to field two permanent biologists and two temporary aids for research, beginning July 1, 1975. I feel strongly that the results of this study should be available before initial oil development occurs. This will take two to three years. The results of this study will provide us with sufficient data to lay the

ground rules for proper oil development--from an aquatic resource standpoint. Any oil development done prior to the completion of that study would be negligent. But given two to three years for study, we will have the knowledge we need.

Biologically we need time to study the lease area. This necessarily must be considered in your evaluation. Perhaps a lease sale now, with a lapse time of two to three years before initial development, is the most logical approach. I feel this is the most logical approach--allowing the state to obtain lease revenues immediately and also allowing sufficient time to gain necessary biological data.

I will conclude by observing that consideration is being given to leasing areas in the Gulf of Alaska and Bering Sea CCS areas, in addition to the proposed Beaufort Sea lease. In my opinion, from a biological standpoint, developing the Beaufort Sea is the most desirable, by far, of the three alternatives. I say this, because the Beaufort Sea biological resources are presently the least valuable of the three areas. This is a point to consider.

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Above testimony was paraphrased verbally, by Richard A. Furniss, at Beaufort Sea lease sale hearings held at Alaskaland in Fairbanks, Alaska, May 28, 1975.

Above written testimony was prepared by Richard A. Furniss, as a private citizen of Alaska, on May 28, 1975.

Signed

Richard A. Furniss  
Date: May 28, 1975